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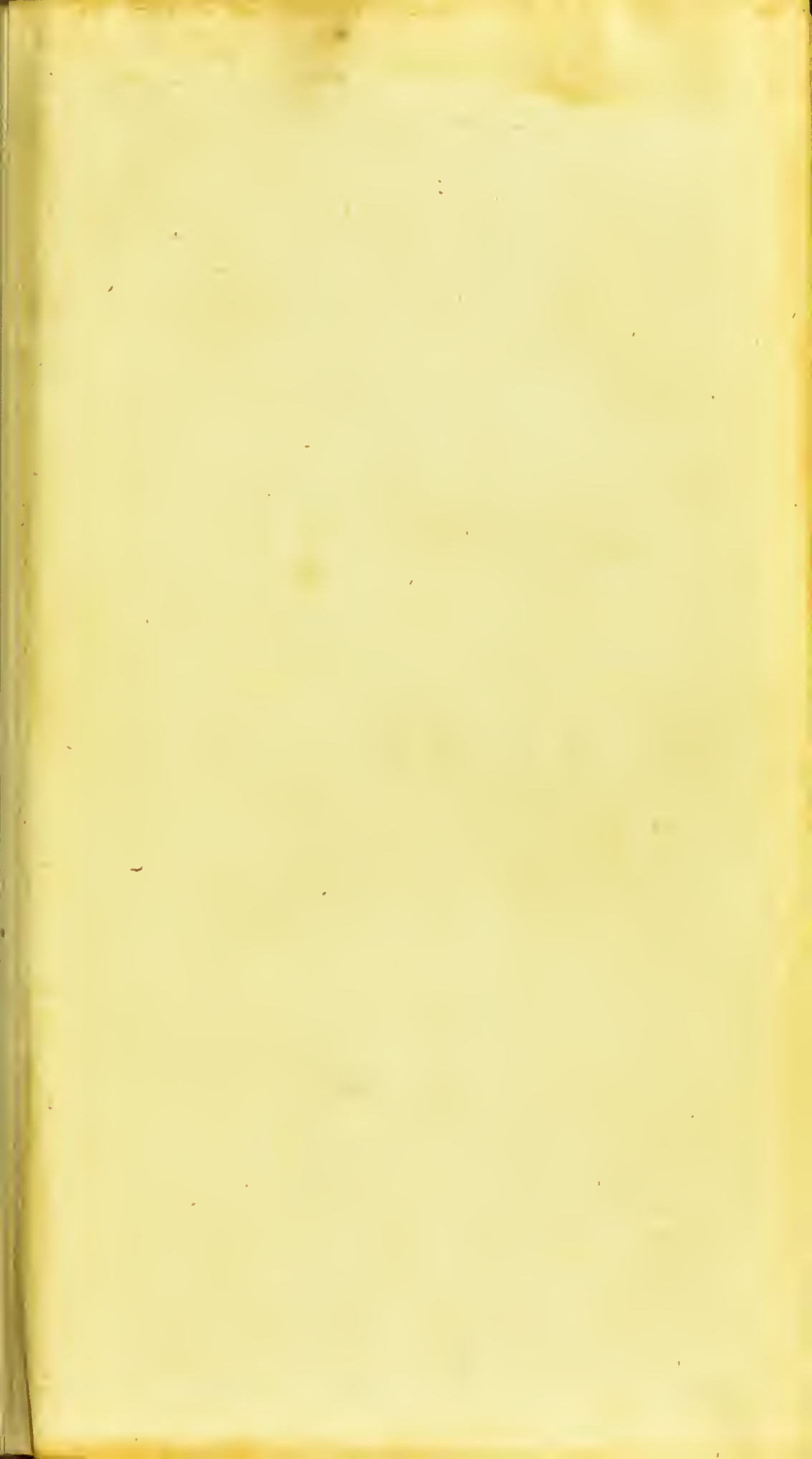
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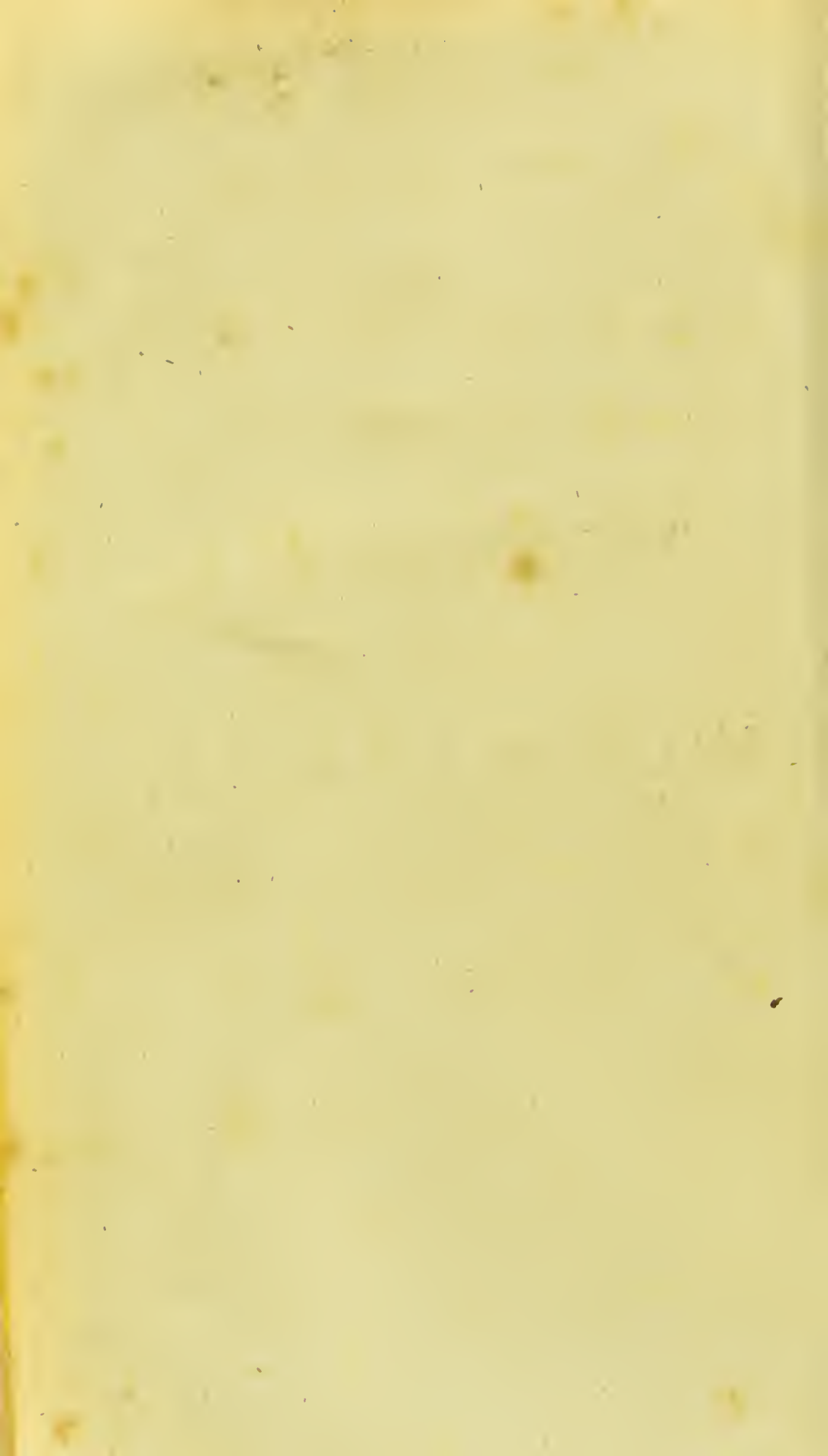




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O F
M I D W I F E R Y.



A
S Y S T E M
O F
M I D W I F E R Y:

TRANSLATED FROM THE FRENCH

O F
B A U D E L O C Q U E,

B Y

J O H N H E A T H,

SURGEON IN THE ROYAL NAVY, AND MEMBER OF THE
CORPORATION OF SURGEONS OF LONDON.

IN THREE VOLUMES.

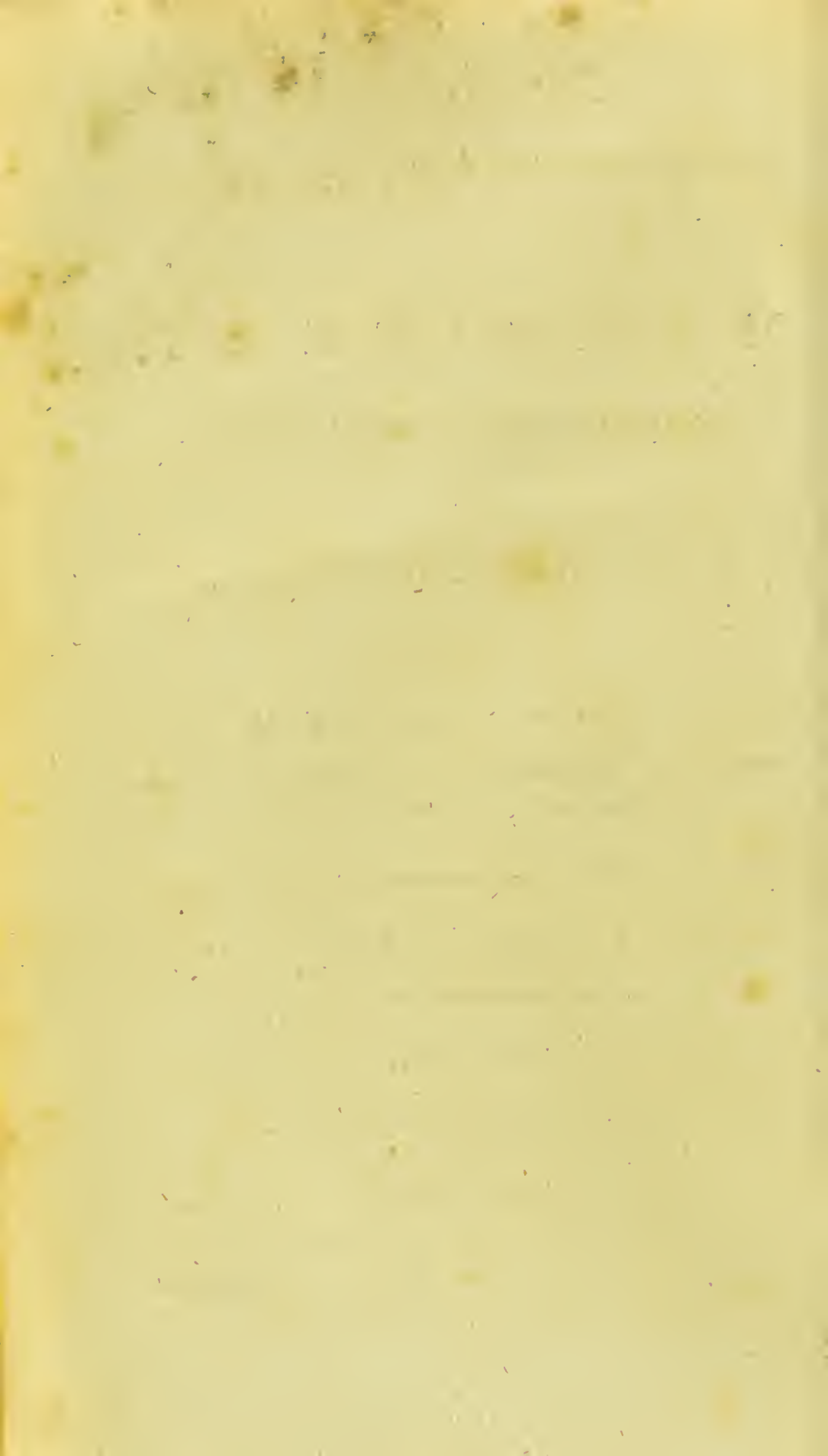
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M DCC XC.



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P A R T IV.

C H A P. II.

Of the Causes which make the Use of Instruments necessary in the Practice of Midwifery, particularly the Forceps and Lever.

1687. **A**MONG the causes which ought to determine us to deliver with instruments, some leave us no resource but in their assistance; and others only indicate their use in preference to other means, the effect of which would not be so prompt nor so salutary.

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1688. Of

1688. Of this last class, are, an *uterine* hæmorrhage, convulsions of the mother, frequent *syncope*s, exhaustion, the cessation of the pains; diseases which permit not the woman to yield to the efforts necessary for the expulsion of the child, such as certain *hernias*, an habitual spitting of blood, the descent of the *uterus* and an inversion of the *vagina*: lastly, the premature issue of the umbilical cord, and often the presence of a second child, which by its position considerably retards, or hinders the delivery of the first.

1689. According as these causes manifest themselves sooner or later in the course of labour, they indicate the use of this or that means preferably to others. When they attack with violence at the beginning of labour, and continue with the same force, leaving no resource but in the extraction of the child, the head being still above the *pelvis*, we ought to turn it and bring it by the feet. We should however be free to choose between that method and the application of the forceps, though more difficult, if we thought the success more certain than that of turning, which in this case generally requires more knowledge and dexterity. This option between the two methods would
be

be still more allowable, if the head were engaged half its length, or more, if they both promised the same advantages : but in my opinion the forceps merit the preference. That instrument is indicated exclusively when one or more of the above-mentioned causes do not occur till the head arrives at the bottom of the *pelvis*. And no other can enter into a competition with it, when the head has not only cleared the superior *strait*, but also the neck of the *uterus*, so as entirely to fill the *vagina* *, except it be the crotchet when we are certain of the child's death † ; because we cannot then turn it and bring it by the feet.

1690. Certain disadvantageous positions of the head, which we cannot rectify with the hand alone, its being locked, an extreme defect of size in the *pelvis* of the woman, and sometimes the monstrous conformation of the child ; certain morbid affections, whether of the child, or of the soft parts of the mother concerned in delivery ; *extra-uterine* conceptions, and the rupture of the *uterus*, are in general causes which indispenfably prescribe the use of instruments.

* See par. 1290, and following.

† See the article which treats of the signs of the child's death.

1691. The greater part of these causes having been already treated of in so many particular sections *, and as the others cannot be explained more seasonably, than when I lay down the method of operating in each of them; I shall confine myself here to the locked head, and the distinction to be made between that state, and that where the head is only stopped in the passage.

A R T I C L E I.

Of the Locked Head.

1692. LOCKING is that state in which the child's head, more or less advanced in the *pelvis*, is so wedged between the bones, that it cannot be pushed farther, or even moved in any other direction, by the efforts of Nature alone.

1693. The greater part of those who have spoken of the locked head have had this idea of it; but some have added that it was equally impossible to push back the head with the hand

* See from par. 1080, to par. 1130 inclusively.

alone above the point to which it was advanced: which however I cannot admit. “For the head to be really locked,” says *M. Levret*, “it is absolutely necessary that it should be more or less advanced, without a possibility of being forced farther down by the efforts of Nature alone, or of being pushed back with the hand; for if one or the other be possible, it is not permanently stopped, it is not really locked*.” After such a definition†, one would not expect to find some of those who admit it, so often contradicting themselves, by employing the words locked head indiscriminately to signify the state in question, and that in which the head is merely stopped in the passage, though they

* Suite des Observations sur la Cause de plusieurs Accouchemens Laborieux, part. ii. p. 266.

† It contains the sense of those given by *Pau*, *Deventer*, *de la Motte*, *de Leurie*, and others. Though I admitted it strictly in my first edition, par. 1518, I was not the less convinced that the hand alone might push back a head really locked. I took great care to inform my pupils of it in my private lectures, demonstrating to them at the same time all the inconveniences of doing it with a view to turn the child; as well as all the importance of the preference which we then ought to give to the forceps, as we shall see hereafter.

differ from each other in many respects. See the following article, par. 1728.

1694. Some authors have distinguished two general species of locking, relative to the manner in which they imagined the head might be fixed. In one, say they, the head touches forcibly only at two parts of its surface diametrically opposite, whether against the *pubes* and *sacrum*, or against the lateral parts of the *pelvis*; and in the other it is equally jammed on every side. We may reasonably deny this last species; for, by the confession even of those who admit it, it cannot exist. “ There is no example,” says *M. Levret*, “ of a locked head on which we cannot apply the forceps with more or less difficulty, either at one part, or another, because it is not equally in contact with the *pelvis* every where*.” The opinion of *Roederer* on this subject is however very different. “ In the complete *paragomphosis*,” says he, “ the child’s head is so jammed on all sides in the *pelvis*, that we should not be able to pass the smallest needle between them, in whatever part we might attempt it†.”

* *Elemens sur l’Art des Accouchemens*, édit. iii. aph. 617.

† *Roederer*, § 431.

1695. I admit but one general species of locking; that in which the head is fixed only by two points of its surface diametrically opposite. But this species contains particular ones; for the head is not always situated in the same manner, nor fixed by the same points: sometimes it is jammed with its greatest length between the *pubes* and *sacrum*, and sometimes with its thickness only. In the first case, it is the forehead and the *occiput* which are in contact with the interior circle of the *pelvis*; in the second, the *parietal protuberances*. This latter species is much more rare than the former, and cannot happen but in a *pelvis* so narrow as to have but three inches and a few lines in its smallest diameter, unless the head be excessively large.

1696. The differences in the locked head, according to many authors, depend not only on the extent of the points of contact which fix it, but also on the region which the head presents to the touch, and on the manner in which that region is placed with respect to the *pelvis*. Sometimes, say they, the crown of the head advances first, and at other times the *occiput*, or one of the temporal regions, or even the face. It is not very easy to conceive how

the head can be locked in these latter cases, especially according to the definition which those same accoucheurs have given of locking. The head may advance more or less when it presents the face, the *occiput* or one of its sides, and then it generally stops in the passage; but it is never really locked unless the *vertex*, or crown of the head, advance first. The proof of this truth is evidently discovered in the observations of those who have treated of the locked head. We there discover that for one head really locked, which they have met with, they have charged ten with being so, although they were very moveable in the *pelvis*, even when the *vertex* presented.

1697. The sentiment of *M. Levret* on the mechanism of locking, and the circumstance in which that accident most frequently happens, does not appear to me to be conformable to those extensive views which he displays elsewhere on this subject. “ If,” says he, “ the waters drain off suddenly, either totally, “ or in part, in the first period of labour, and “ the *bregma* of the child should be opposite the “ middle of the projection which results from “ the union of the body of the last *lumbar* “ *vertebra* and the *sacrum*, that projection “ may

“ may lodge in the *bregma*, by depressing it
 “ at each contraction of the *uterus*; which
 “ will hinder the head from turning in the
 “ second period, for the forehead to place it-
 “ self on one side; it will fix itself in that
 “ part, and then the *occiput* will first tend
 “ downwards as far as the neck; it will lodge
 “ behind the arch of the *pubes*, and the
 “ shoulders will rest on the superior branches
 “ of the *ossa pubis*, hanging over them more or
 “ less; and if the head remain long in that
 “ state, it will be locked*.” How is it possi-
 ble the head should be locked in this case? It
 cannot follow a more favourable course in its
 descent; it is its posterior extremity which first
 advances in the cavity of the *pelvis*; where it
 is scarcely arrived before the back of the neck
 is found against the *symphysis* of the *pubes*, and
 the occipital region answers to the arch of
 those same bones, under which it must engage,
 to rise up before the *mons veneris* turning round
 on the inferior edge of the *symphysis*, as on its
 axis; it is this position which the head gene-
 rally takes with respect to the inferior *strait*,
 whether it has traversed the superior in a
 diagonal position, or any other: this is the best

* Observation sur les Accouchemens Laborieux, part. ii.
 edit. 4^{me}. page 277.

possible position, considered in the latter period of labour, and that which we ought to place the head in, when the efforts of Nature do not direct it so. See what I have already said on the mechanism of the different species of natural labour.

1698. If the head, in the case described above, sometimes stops and remains in the lower part of the *pelvis*, after having followed the course indicated by *M. Levret*, whether it be retained there by the situation of the shoulders over the *ossa pubis*, or by any other cause, it cannot be locked there. To be really locked, the head must follow a very different course at the beginning of labour; for it cannot be fixed with its greatest length between the *sacrum* and *pubes*, unless the *occiput* rest behind the latter superiorly, and remain there in some measure immoveable, while the forehead is forced to descend posteriorly opposite the *sacro-vertebral* angle. By following this course, it is the largest diameter of the head which tends to advance foremost; it is the anterior *fontanelle* which presents more and more, in proportion as the head advances; it is on this *fontanelle* that the *teguments* swell and puff up; and it is this same point which constitutes the summit of the conical figure acquired

acquired by the head when locked in the *pelvis*, instead of being sunk and depressed by the projection of the *sacrum*, as asserted by *M. Levret*.

1699. The head may also be locked or jammed lengthwise between the *pubes* and *sacrum*, if the *occiput* resting against the latter ceases to advance, while the forehead shall be obliged to descend behind the former. In either case, it is the large diameter of the head which tends to pass horizontally between those two bones: which cannot happen without causing considerable frictions, even when the *pelvis* wants but a few lines of its natural size in that direction. I delivered a woman in whom the child's head had been locked in that manner for two days, although the *pelvis* was of the usual size. Five children, each more voluminous than that, had already passed it without difficulty; because their heads had presented differently, and the *uterine* forces were then differently directed. I have since that time met with the same case in two other women; I was obliged to deliver them also, after a very long labour. Whenever the child's head follows the course stated by *M. Levret*, far from offering its greatest diameter foremost
between

between the *pubes* and *sacrum*, it only places its height there, considered from the base of the *cranium* to its summit, or its perpendicular diameter, which is generally fifteen or eighteen lines less than the former.

1700. The child's head when locked always acquires the form of a wedge more or less lengthened, whose base remains above the part where it stops; as *de la Motte* has very clearly expressed it, by comparing it then, with respect to the *pelvis*, to the key-stone of an arch; whence we see that it cannot be locked but by passing from a larger space into a narrower, and that it is not impossible to push it back above the point where it is stopped and fixed.

S E C T I O N I.

Of the Causes, Signs, and Accidents of the Locked Head.

1701. THE head cannot be locked without the concurrence of several causes, of which some are predisposing, and others determining
or

or efficient. The latter depend on the action of the *uterus*, and the other powers which contribute to the expulsion of the *fœtus*; but that action must be vehement, and continue a long time: we need never fear it in a delicate and exhausted woman, whatever causes exist which might otherwise occasion it.

1702. The causes which we call predisposing arise from both mother and child, and generally consist in a defect of proportion between the dimensions of the *pelvis* and of the head which must pass it. This defect of proportion sometimes depends only on the bad position of the head; at other times on its extraordinary size and solidity, or on the deformity of the *pelvis*. It is so difficult to discover and estimate by the touch, not only the degree of disproportion which may cause the head to be locked, but also the necessary degree of solidity in the head, and the quantity of force which the woman must exert for it, that we cannot absolutely judge at the beginning of labour, without fear of mistaking, whether the head will be locked, or whether it will only meet with more or less difficulty in traversing the *pelvis*. One thing we are very sure of, that the head can never be locked in a *pelvis*
very

very small or very large, relative to its own volume; and that that accident is no more to be dreaded when it is very supple, and the woman very weak. It may stop in the latter case, but never be really locked.

1703. The immobility of the head is the essential mark and pathognomonic sign of its being locked. The tumefaction of the hairy scalp, that of the neck of the *uterus*, which then forms a kind of pad more or less thick under the head, the *engorgement* of the *parietes* of the *vagina* and the external parts of the woman, are but accessory effects, though inseparable from it.

1704. These effects always precede the head's being locked, and augment during its continuance. It is only to be dreaded when those symptoms manifest themselves; but it does not always happen when they are present. We frequently observe those symptoms, but the head is very seldom really locked.

1705. It is not necessary that the head should advance between the bones of the *pelvis*, and be strongly jammed there for the *teguments* of the *cranium*, the neck of the *uterus*, the *vagina*, and the external parts of the woman to be *engorged* and inflamed; it is sufficient that

it be strongly pressed on the entrance of that cavity, to occasion all those effects; since we see them appear, in the same order, when there exists, as I may say, no proportion between the diameters of the superior *strait*, deformed in the highest degree, and those of the head; so that it cannot any way engage in it. *De la Motte* and *Roederer* inform us, that in this last case, the hairy scalp sometimes swells and projects so far into the *vagina*, that it might lead us into an error, by making us believe that the *cranium* itself was advancing, while it remains entirely above the *pelvis*; which I have observed as well as they. I have moreover seen gangrenous eschars in the neck of the bladder after these same cases: when the woman has not been assisted in time with respect to the delivery.

1706. Of all the signs which indicate the head's being locked, there is none less certain than the swelling of the *teguments* of the *cranium* and the tumefaction of the parts of the woman. If it sometimes depends on the pressure which it suffers between the bones of the *pelvis*, it much oftener is caused only by the rigidity or hardness which continues after the opening of the membranes, in the pad
which

which constitutes the neck of the *uterus*. It is indeed easy to judge from which of these two causes it proceeds. In the first case, the swelling extends higher than the edge of the orifice of the *uterus*, as far as the part where the bony case is pressed against the surface of the *pelvis*; and the orifice itself is also tumefied, and more or less painful: in the second, the part formed by the neck of the *uterus* is hard, not very thick, and the swelling of the *teguments* of the *cranium* is limited to the same height. Much oftener still, the tumefaction in question depends only on the resistance which the external parts oppose to the passage of the head, as we almost always remark in a first labour. As to the tumefaction of those parts themselves, of the *vagina* and neck of the *uterus*, how many times has it not been occasioned by frequent and inconsiderate touching, either of an accoucheur or midwife? Lastly, this tumefaction may be anterior to labour, and depend only on pregnancy, or even on other causes which are foreign to it.

1707. Not only, these symptoms do not certainly characterize the locked head, since some of them may be foreign to labour and pregnancy; but we should not always be
founded

founded in supposing a head to be locked which has ceased to advance after descending to the bottom of the *pelvis*, though pushed forward by violent efforts; and even when it seems impossible to push it back: for though it cannot then descend farther, nor recede in a sensible manner, it is often moveable on its pivot, and may turn round as on its axis; which proves that it is not locked but only stopped in the passage. See par. 1729, and following. I could quote a great number of facts in support of all these assertions; and in many of them the finger methodically placed, and a different position on the part of the woman, have happily terminated labours, that could not have been finished with the forceps.

1708. The head is not really locked but when it cannot make any of these movements; when no instrument whatever can pass over more than about a quarter of its circumference, any more than of that of the inside of the *pelvis*, nor penetrate the places where those parts are in contact.

1709. It would be very advantageous if we could distinguish the cases in which the child's head must be locked, from those in which it is only threatened, that is to say, in which the

head cannot, without a great deal of difficulty, traverse the canal presented it by the *pelvis*; that we might in the latter case abandon the delivery to Nature, and in the other, deliver before the accident take place. But it is almost always impossible to make that distinction, because the same symptoms which precede the locking, equally manifest themselves when the head only threatens to become so.

1710. In either case, the head not being able to engage but by the crossing of the bones, or riding over each other's edges, the *teguments* of the *cranium* form into folds in the direction of the *sutures*; those same *teguments* swell, and produce a tumor larger or smaller, endued with a sort of elasticity which never deceives the finger of an accoucheur. The head having engaged with extreme difficulty, sooner or later stops; or else it advances at last so rapidly, that it makes more progress in fifteen minutes, and often in one, - than it had done before in fifteen hours or longer.

1711. This difference arises from the form of the *pelvis*. When the head stops in the middle of its course, and becomes locked, the *pelvis* is not only narrow at its entrance, but also in the middle. This last, which is called
the

the excavation, is on the contrary larger than common, or at least as large, as well as the inferior *strait*, when the head descends rapidly at the latter end of labour. In the former case, the head suffers a more considerable friction as it advances farther, till it be entirely fixed: which increases the force and intensity of the symptoms stated above. In the latter case, it undergoes those frictions only in its passage through the superior *strait*, and its greatest breadth has no sooner cleared that, than all the above-mentioned effects disappear; because it then finds itself in a larger space, and is no longer compressed, because the bones of the *cranium*, recover their former state, and the circulation intercepted in some of the veins of the *teguments* and of the *aponeurotic* covering of the head is restored.

1712. We should then be obliged to leave it almost entirely to time to distinguish the head which will be locked, from that which, after threatening it, shall be delivered without help, if we could not, in all these cases, judge of the form of the *pelvis*, of the solidity of the bones of the *cranium*, and the firmness of their *sutures*; as well as the strength of the woman. If there are cases where we can have no other

rule but time, we ought to know how to estimate that time, that we may be able to decide seasonably what measures are to be pursued; the salvation of both mother and child often depends on an instant, and the accoucheur is in some measure the arbiter of their fate: too much confidence in the unknown resources of Nature, or in the effect of certain remedies, may be as pernicious to both, as too precipitate and ill directed *manœuvres*.

1713. The locking of the head is always very pernicious to both mother and child: it cannot exist long without destroying the latter, and exposing the former to a thousand accidents, which often leave a dreadful train of evils behind, render her life a burden, and make her every moment wish for death.

1714. Depression, and often fractures of the bones of the *cranium*, deep *engorgements*, extravasations in the ventricles of the brain, under the *dura mater*, between that and the bones, under the *pericranium* itself detached from the *parietalia*, &c. as well as profound *echimoses* between the *sub-occipital* muscles, are effects which I have observed in many children after their heads had been locked.

1715. The

1715. The head cannot be locked without strongly compressing, and in some measure destroying the soft parts of the woman in the places where it is in contact with the interior circle of the *pelvis*; and causing a swelling and inflammation of the parts situated underneath, such as the neck of the bladder, the *urethra*, the edge of the orifice of the *uterus*, the membranes of the *vagina*, the *rectum*, and even the external parts. The urine ceases to flow, and we cannot draw it off with the *catheter*, because the canal of the *urethra* is totally obliterated. The woman tormented at the same time by the necessity of discharging it, and by the pains of labour which perhaps she is solicited to make the most of, gives herself up to inconsiderate efforts, till she is exhausted, or her pains go off. A fever comes on, the blood is heated, and carried impetuously towards the superior parts, where it often produces new disorders, the effects of which are more dreadful than those of the first.

1716. If the inflammation of the parts which cover the inside of the *pelvis*, sometimes subsides after delivery, when the head has been locked, sometimes also, and doubtless too

often, a gangrene is the consequence. The falling off of the *eschars* leaves broad and rebellious ulcers, as well as openings into the neck of the bladder and the *rectum*; and to complete the misfortune, when the woman survives, the urine and *fæces* fall continually into the *vagina*, cover the surface of those ulcers, increase their putrefaction, and would render them incurable, if they were not so in their own nature.

S E C T I O N II.

Indications in the Locked Head, considered exclusively of the Accidents which are the Consequence of it.

1717. ACCORDING to the sketch I have just given of the consequences of the head's being locked, we see how salutary it would be to prevent it, by terminating the delivery seasonably. If we cannot always procure this good fortune to the mother and child, at least we ought to operate without delay, when we discover

cover that it has taken place ; unless particular circumstances which are already consequences of it present more pressing indications, and require us to use means which then become preparatory to delivery ; such as bleeding, baths, emollient topics, &c. though it is to be feared they would be employed without effect, since they cannot reach the first cause of all those accidents, which is the locking itself.

1718. The extraction of the child is the principal indication ; but the method of performing it must be varied according to the state of the child, as well as of the parts of the mother.

1719. The ancients used crotchets to open the head and extract it ; and some as late as the middle of the present century, only used them after they had opened the head more methodically with other instruments, and emptied it. Several, among the moderns, have proposed fillets variously arranged, which have been very happily forgotten since the invention and improvement of the forceps. If the former thought themselves reduced to the deplorable necessity of mutilating the child,

the latter directed all their endeavours to preserve it.

1720. *Mauriceau*, whose work is still much esteemed, thought it was a necessary cruelty to kill the child when the head was locked, in order to save the mother, whose death appeared to him not less inevitable if that method were not taken; and *de la Mothe*, more timid, waited till it was deprived of life to open the head and extract it with the crotchets. The conduct of the latter would not at present inspire less horror than that of the former: such practices could not be tolerated, but in the times in which their authors lived; the art had not then counted *Smellie* and *Levret* among its masters, and many others, who have since enriched it with their discoveries.

1721. If the forceps in this disagreeable circumstance do not always secure the life of the child, already languishing more or less, at the time we use them, it must at least be confessed that a great number have been indebted to them for their existence, who would otherwise have been sacrificed for the safety of their mothers; and others for the advantage of being sprinkled, and even baptized. Though this
instrument

instrument adds little to the accidents the woman then suffers, if we use it with method and judgment, it adds enough nevertheless to justify us upon some occasions, in preferring the crotchets and other instruments destined to open the head, if we could have certain signs of the child's death.

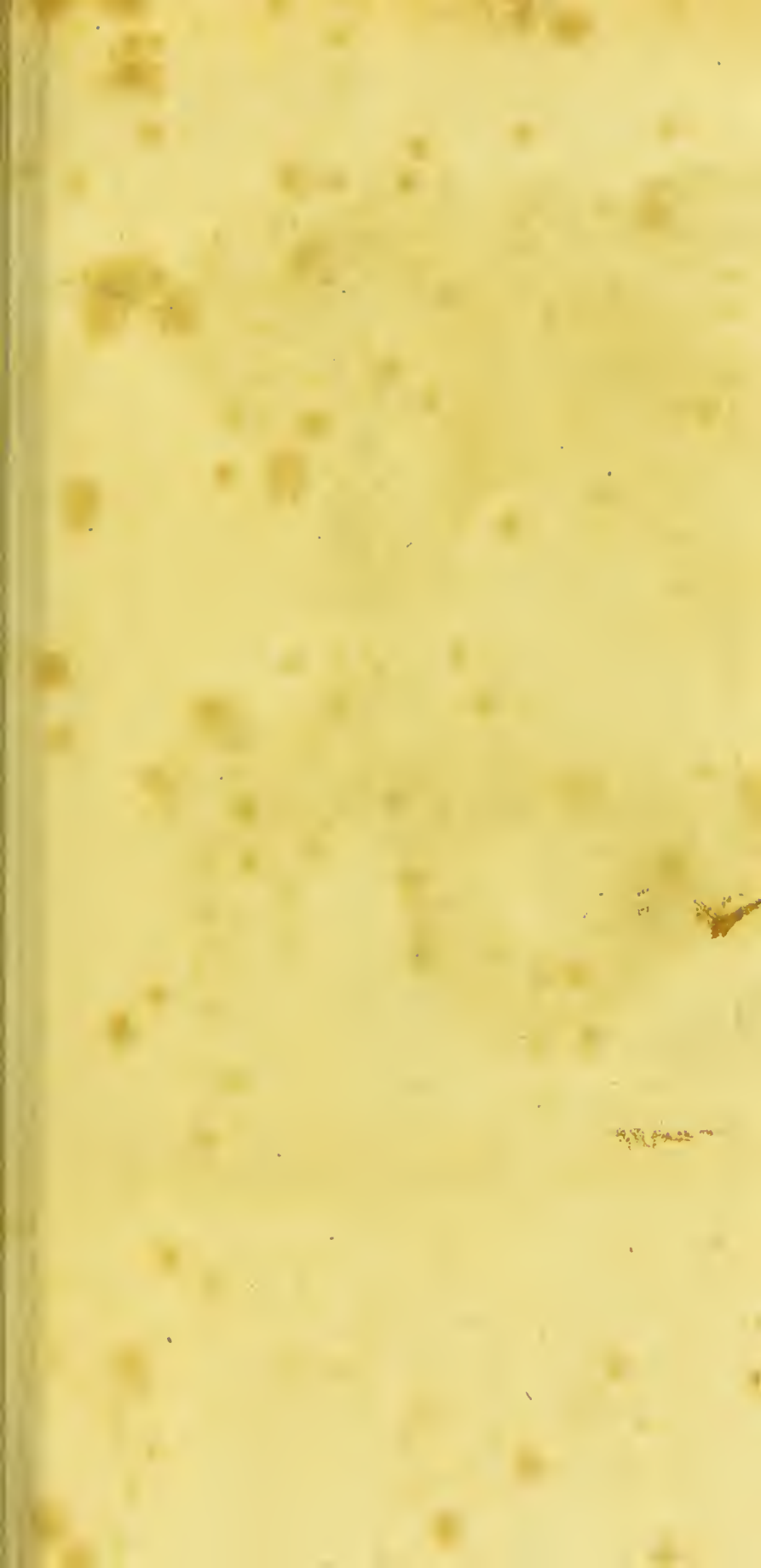
1722. *Roonhuiſen's* lever, published and so much boasted of towards the middle of this century, has all the inconveniences of the forceps, without any of their advantages, as I have already demonstrated; though some accoucheurs still give it the preference. It would be the most proper instrument, if it could be insinuated into the very parts where the points of contact are, which essentially constitute the locked head, if the greatest thickness of the head were engaged as far as those points, and if that head had only to pass out of a narrower place into a larger. The lever would be the most proper instrument to make it execute that first step; but we ought to expect nothing more from it. Its utility would be limited to that; and all that has been attributed to it beyond is illusive.

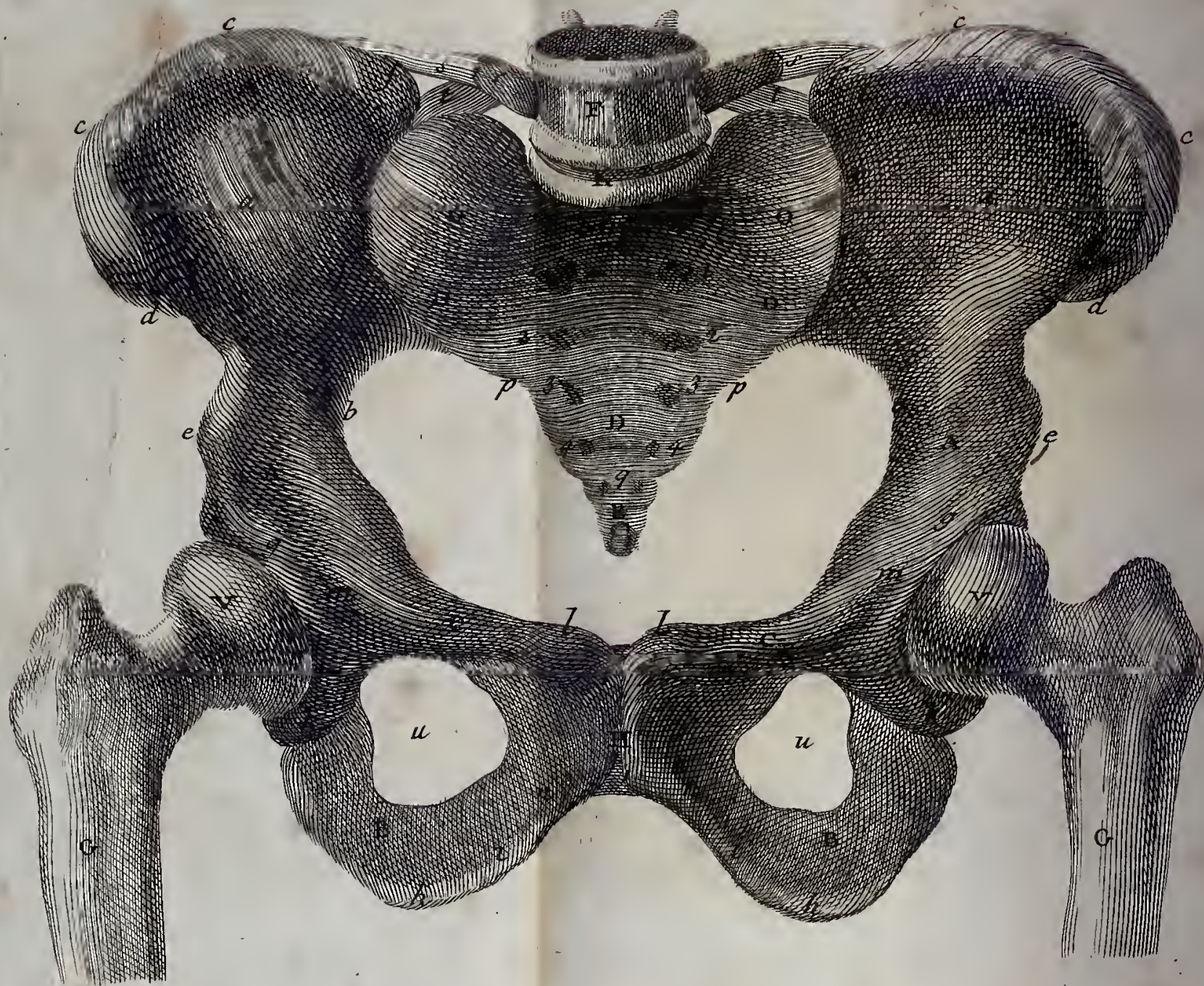
1723. The Cæsarean operation, recommended by *Roederer*, in what he calls a *paragomphosis*,
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in which, says he, the head is wedged on all sides against the internal edge of the *pelvis*, and makes but one body with it, though it would endanger the mother's life, would not certainly save that of the child*; the locked head

* I should be silent concerning the faults that have been committed in this respect, so shocking are they to think of, if they did not appear to me more likely than any thing else to impress deeply on the minds of young practitioners, the truth of what I have stated concerning the inutility and danger of the Cesarean operation, when the child's head is really locked. A surgeon, worthy of some regard on account of his modesty, assured me that he had co-operated a few years ago, in a case nearly of this sort; and that after having disengaged the child's *trunk*, a strong man mounted on the patient's bed, was obliged to pull at it a long time with all his strength, to extract the head, while another pushed it up with his hand in the *vagina*. What surprised me more was to learn that the woman had survived the operation, and died of an indigestion at a time when the greatest hopes were entertained of her cure.

In the year 1788, the Royal Academy of Surgery received an account of a much more alarming example of the ignorance of certain surgeons who practise midwifery. They had first tried crotchets and other methods without effect, till they had crushed the head in the *pelvis*. Though the woman seemed to be without resource, the author of the observation, as unskilful as those who had preceded him, performed the Cesarean operation; and not being able to bring back the head which was at the bottom of the *pelvis* and had already,





Chailly del.

devisse Scut.

head however never is such as that author has described it. The advantages of the Cæsarean operation, if any could be then allowed it, would be much inferior to the section of the *pubes*. The circumstance in question is precisely that in which that new operation would have the most success, if the *ossa pubis* could be separated with as little inconvenience as its partisans have asserted; for the separation of those bones, by destroying one of the points of contact which keep the head fixed, would certainly favour its exit *.

1724. Whenever there are any hopes of extracting the locked head with the forceps, we

already, adds he, cleared the neck of the *uterus*, he had recourse to the section of the *pubes*, to extract it the natural way: which was again attempted in vain. What remained to be done now? He divided the child's neck in the *uterus*, by means of the opening made for the Cæsarean operation; and extracted the body through it, and the head afterwards by the natural way, a little enlarged by the section of the *pubes*. The woman just lived long enough to go through these various operations; and on opening her body, they found the small diameter of the superior *strait* was but two inches and an half, the oblique three and an half, and the transverse three inches two lines. This case is rather of the species described in par. 1729 and following, than the locked head which is the subject of this article.

* See what relates to the section of the *pubes*.

ought to have recourse to them : the cases, if any exist, in which they are insufficient, must be excessively rare. No other method can enter into competition with that while the child is living ; till the advantages of the section of the *pubes* shall be better proved, if time should ever prove that it can have any advantages at all : but when we are certain of the child's death, if the parts of the mother are in a state of inflammation and pain, it is better to open the *cranium* and empty it, in order to bring away the head with the crotchets, than to use the forceps : this method has the advantage of destroying the force of the points of contact which constitute the locking ; whereas the forceps, in many cases, augment it : which may give birth to new accidents, or aggravate those which exist already.

1725. Before we enter into the detail of all these operations, and of the instruments to be made use of, it is necessary to shew wherein the locked head differs from the head merely stopped in the passage.

A R T I C L E II.

Circumstances in which the Head may stop in the Passage without being locked, and the Difference between those two States.

1726. AUTHORS have used the word passage so vaguely, and in such different circumstances, that it is not very easy to decide what they meant to express by that term. Have they given that name to the whole extent of the canal which the head must pass; or only to the inferior *strait* and the opening of the soft external parts, as seems to appear through the obscurity of the writings of most of them? To determine the ideas of the reader on this subject, I advertise him here, that by the word passage considered with respect to the *pelvis* alone, I only mean the inferior *strait*; and I acknowledge no head stopped in the passage, but that which cannot pass it, notwithstanding the most powerful efforts of Nature.

1727. Divers causes may stop the head at that place, and every one of them presents different indications. The head may stop in the

passage, 1. whenever it preserves the transverse or diagonal position, in which it cleared the superior *strait*; 2. when the chin recedes from the top of the breast, and the *occiput* turns backward from the time it begins to advance; because it then comes with the upper part of the forehead to the center of the inferior *strait*, and presents the whole length of its longest diameter to it, as observed in par. 1277, and following; 3. it may find the same obstacle to its exit, whatever may be its position, when the inferior *strait* is contracted; 4. when the external parts make much resistance; 5. lastly, if the shoulders themselves stop at the superior *strait*. According to the opinion of many accoucheurs, the shortness of the umbilical cord, and its being twisted round the neck of the child when it is very long, may also retain the head in the passage, and hinder it from passing: I think I have sufficiently exposed that error in another place, and therefore shall not discuss it again. See par. 650, 1188, and following.

1728. The head which is merely stopped in the passage differs from that which is really locked, in not being absolutely immoveable as that is. In general, we might push it back with a view of searching for the child's feet,
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if we had no other resources for terminating the delivery : excepting, however, when it has cleared the neck of the *uterus*, or when it has not passed the superior *strait*, more or less contracted, without extreme difficulty. Though the head in this last case cannot go back, yet it enjoys a rotatory motion, however limited it may be, which it cannot execute when locked.

1729. If the head is not immoveable in this case, as in that where it is really locked, if it advances a little during the pain, and afterwards goes back ; if we can easily push it back even above the margin of the *pelvis*, or make it turn on its axis, there is nevertheless a circumstance in which its movements are so limited, as to give reason to suppose it really locked. To explain this circumstance, we must suppose the *straits* of the *pelvis* of a certain given size, under the natural dimensions of the head, while the excavation is respectively larger : which often happens when the *sacrum* is deformed by too great a curve. I shall fix the distance at three inches and a few lines from the *pubes* to the *sacrum* superiorly, and to the bottom of the first piece of the *coccyx* inferiorly.

1730. Proceeding on this supposition, which is not begged, since we find many *pelves* similar

to that supposed *, the head, the transverse thickness of which is commonly three inches and an half, taken between the *parietal protuberances*, cannot clear the superior *strait*, but by diminishing several lines in that direction; nor the inferior *strait*, but by suffering an equal reduction from its summit to the base of the *cranium*, since it is that dimension which must then pass in the direction of the small diameter of that *strait*.

1731. The progress of the head in this case is at first very slow †, folds are formed in the *teguments* which cover it, and we presently perceive a tumefaction more or less extended, which continues to augment till it has cleared the superior *strait*; as we observe when it is going to be locked. But no sooner has it passed that *strait*, than all the above-mentioned effects vanish, if the pains go off, or abate; and the head recovers its original thickness, as happens before our eyes when the child comes into the world with the *cranium* lengthened, and as it were deformed: because it is then at liberty in the excavation of the *pelvis*, and is no longer

* I have several of them in my collection.

† I have frequently observed this sort of cases, and therefore speak positively concerning them.

compressed at the sides, as at first. This restitution of the transverse thickness of the head takes place so much the more speedily, in this case, because the pressure which the *vertex* suffers on the point of the *sacrum*, the *coccyx* and *perinæum*, tends to diminish its height, to curve the *parietal* bones, throw their *protuberances* outwards, and lastly, augment the breadth of the *cranium* in that direction.

1732. Unless the efforts of the woman continue yet a long time, and with vehemence, the head thus retained cannot be expelled from the *pelvis*; so difficult it is for it to lessen sufficiently from the summit to its base. If those efforts continue, the tumefaction of the hairy scalp, far from diminishing, as I have said above, augments more and more, as we see when the head is really locked; and if it then differs in any thing from the locked head, it is that it can still descend a little during each pain and go back again immediately, that it can be moved a little on its axis, and touches no where with so much force, but that we may introduce a proper instrument between it and the *parietes* of the *pelvis*.

1733. The *cranium* is then, as it were, shut up in the middle of that cavity, without being

able to advance or recede sensibly ; for whether we attempt to extract the head or push it back, we must diminish its size in the diameter which is to pass between the *pubes* and *sacrum*. It must be flattened from the *vertex* to the base, to come out ; and from one *parietal protuberance* to the other, to go back again above the *pelvis*, as it was when it came down ; which cannot be brought about with the hand alone, and besides would be attended with much danger *.

1734. I have already stated that every cause capable of stopping the head in the passage presents a different indication ; this is the time to demonstrate that truth. When the obstacle which prevents the head from engaging in the inferior *strait* only arises from its transverse position with respect to that *strait*, it must be changed, and the *occiput* brought under the *pubes* ; unless reasons already known direct us to turn it towards the *sacrum*. When the head engages in such a manner that the superior part of the forehead presents at the center of the inferior *strait*, we must push back this part to bring down that

* It is in this sort of cases, that the Cesarean operation would still leave great difficulties to be got over in extracting the head. See the note on par. 1723.

where the *sagittal suture* joins the *lambdoidal*, as we see in par. 1284 and following. We must extract the head with the forceps whenever it is stopped in the passage by a defect in the dimensions of the inferior *strait*, except that defect be excessive; for then it will require other methods*. While on the contrary, it will suffice, to relax and mollify the external soft parts, when they oppose a resistance superior to the action of the organs which endeavour to expel the child, and when the head is stopped by no other cause. We cannot so easily change the direction of the shoulders, at the superior *strait*, when it is they which oppose the effect of that same expulsive action, though *M. Levret* has recommended it†; and I foresee the astonishment which the proposition of

* Crotchets if the child be dead; and the Cæsarean operation if living. We must not here confound the case where the extreme narrowness of the inferior *strait* obstructs the exit of the head and the application of the forceps, with those mentioned in par. 1729 and following, and which have given occasion to the note on par. 1723, because it is very different from them. When the inferior *strait* is so much contracted, the superior is very wide, and the head may easily be pushed back.

† *M. Levret*, Suite des Observations sur la Cause & des Accidens de plusieurs Accouchemens Laborieux, 4^e. edit. page 4. observ. ii.

the forceps in this case would cause in the minds of those who have not sufficiently considered it.

1735. It is only by inference that we can ever judge that it is the shoulders resting on the superior *strait* which obstruct the expulsion of the head. For that inference to be well founded, it is necessary, 1. that the *pelvis* be of the usual depth, moderately contracted at its entrance, but its other parts well formed, that is to say, of a good breadth at the inferior *strait*; 2. that the head when in the excavation should be free and not wedged; 3. that the external parts should not appear to hinder its exit, and that the expulsive forces of the woman continue in action long enough to expel it in any other case. If we are well founded then in attributing the obstacle to the situation of the shoulders, and their relation to the superior *strait*, yet it is not till after the exit of the head that we can be certain it depended on no other cause.

1736. This case differs in many respects from that for which *M. Levret* recommended changing the direction of the shoulders at the superior *strait*, either by advancing a hand into the *vagina*, or by using one of the blades of the

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the *forceps* *. I think I have demonstrated that the obstacle which then opposed the expulsion of the head, arose from its position only and from the manner in which it had engaged ; and that it no way depended on that of the shoulders †. In the case in question, on the contrary, it depends on that entirely : resting on the margin of the *pelvis* and hanging over it, they spread still farther during the effort which tends to push the *trunk* downward, the shoulders hinder that same effort from acting on the head and expelling it. It would be equally in vain, says the celebrated author I have just quoted, to endeavour to extract it, since the shoulders could not follow ‡. If we attend to the mobility of the child's neck, and at the same time compare its length with the depth of the *pelvis*, we shall see that the opinion of *M. Levret* is not so well founded as it appears at first sight, and that we may extract the head though the shoulders should not

* The head has not turned on the back of the neck as it advanced, as remarked in par. 1278 and following ; it is the posterior *fontanelle* which presents here at the bottom of the *pelvis*, and not the top of the forehead.

† See par. 1278 and following.

‡ *Levret*, in the part already quoted in par. 1734.

engage a single line. To place this truth in a clear light, let us suppose the child's head at the bottom of the *pelvis*, the *occiput* behind the left *foramen ovale*, and the posterior *fontanelle* near the edge of the arch of the *pubes* on the same side. The mobility of the neck allows us to bring the *occiput* perfectly and without inconvenience under the *pubes*, that is a fact which no one can doubt of; and its length, which exceeds that of the *symphysis* of the latter, permits us to disengage it entirely by raising it up before the *mons veneris*, as it disengages in a common labour. As the length of the neck posteriorly is then nearly equivalent to that of the *symphysis* of the *pubes*, so the extent of its anterior part, taken from the chin to the top of the breast when the chin is turned backward, at least, equals the length of the *sacrum*: whence we see, that the chin may arrive at the bottom of the *vulva*, before the shoulders and breast quit the margin of the *pelvis*, and without stretching the neck painfully. The extraction of the head is therefore possible in cases where the shoulders, fixed over the superior *strait*, render its expulsion impossible; and I prefer it to that which *M. Levret* recommends. If the shoulders do not descend
after

after the exit of the head, we may remove them more easily and advantageously than could have been done before; because there will then be more room in the *pelvis*. That is the method which I have several times followed in cases of this kind; and which I shall repeat, if I meet with any more of them.

C H A P. III.

Of the Use of the Forceps, and the Method of applying them in each particular Case where they are proper.

1737. **T**HE greater part of those who have treated of the use of the forceps, have given but vague and very uncertain rules concerning it; so that one might be tempted to believe that their application cannot be reduced to rule, and that their success depends only on a lucky chance. It is because they have not sufficiently attended to the position of the head, to its height in the *pelvis*, as well as to the course it ought to follow in each particular situation, that many accoucheurs have not always obtained from them the success they expected, and that many still employ them without effect, even in very simple cases. I have already stated that the manner of applying them is not arbitrary, but subject to fixed rules, which are founded on a knowledge of the *pelvis*; of its structure, of the form and situation of the child's head; of the relation which the dimensions of all these parts have to

to each other ; and, lastly, of the form, and mode of acting of the instrument itself.

A R T I C L E I.

General Rules concerning the Use of the Forceps.

1738. AMONG the rules to be observed in the use of this instrument, some regard the situation of the woman, and others the mode of operating.

1739. There is but one single position proper in all cases. The woman ought to be laid on her back at the foot of the bed, so that her breech may project a little beyond it ; as I have recommended for preternatural labour : and the same precautions must be taken to fix her in that attitude. All other positions seem to me inconvenient, either for the woman, or for the operator ; and especially that where she rests on her elbows and knees, with the belly turned towards the bed, and the breech to the accoucheur*.

1740. There

* For a long time past, my brother and I have united a practice which cannot be exceeded by that of any single accoucheur ;

1740. There are, however, favourable circumstances in which we may deliver the woman with the forceps, although she be laid on her little couch, as in a natural labour, provided only that she have the breech raised, the thighs and legs bent : that is, when the head is entirely in the cavity of the *pelvis*, and the *occiput* or forehead presents at the arch of the *pubes*.

1741. The rules which concern decency also must not be neglected : it would be superfluous to point them out to a well-bred man.

1742. But those which relate to the application of the forceps, are only known to the enlightened practitioner. We must take care; 1. to warm the instrument a little, to separate its branches, and anoint them with butter or pomatum ; 2. to insinuate them separately, and in a different manner, according to the position of the child's head, and the part of the *pelvis* which it occupies *.

1743. The

coucheur ; and we have never met with a case where it was necessary to place the woman in this attitude, either to favour the expulsion of the child, or to turn it and bring it by the feet, or lastly, to extract it with the forceps.

* It is pretty much the custom to conceal the forceps from the woman, for fear of alarming her ; but I am of opinion that nothing can encourage her more, than to make her understand

1743. The blades of the forceps ought always to be applied on the sides of the head; if there are exceptions to this rule, they are very few in number, and I shall point them out in the sequel. Sometimes it is best to introduce the male branch first, that is to say, that which has the pivot; and at other times the female branch. If in many cases we must slide them up towards the lateral parts of the *pelvis*, often also we are obliged to place one of them under the *pubes*, and the other before the *sacrum*; at other times, they must answer to the middle spaces between these four principal points; because each position of the head requires a different management in many respects.

1744. This observation did not escape the celebrated *Levret*: after enumerating the cases in which we are obliged to apply the forceps, he says that each of them seems to require a particular method, but that he has found a general one applicable to all. He states as invariable rules that we ought never to apply the

derstand them, and allow her to examine them, since we cannot use them without her perceiving it. I have never used them without in a manner receiving them from the hands of the woman herself.

forceps

forceps on the child's face; nor introduce them at any other part than the sides of the *pelvis*, because there, adds he, there is the greatest space. I shall briefly examine this general method, founded on those two grand principles; that the reader may judge of it, and compare it with those which I shall describe in the sequel for each particular case.

1745. According to *M. Levret*, we must search for the part of the *pelvis* where there is the most space, and where the head is least wedged: that is, adds he, at the sides. If it is the left side, for example, we are to insinuate there the female branch of the forceps, so that its convex edge may be above and its new curve underneath, or turned towards the *fourchette*; taking care to keep the external end very low, till the extremity of the blade reaches as far as the superior *strait*. We are then to sweep it round, making it describe half a circle, passing it under the child's head, and before the *sacrum*, to conduct it to the side opposite to that where it penetrated; so that its new curve may be upwards, and its convex edge underneath. We afterwards insinuate the second branch at the same side, that is to say, towards the left side, in the case supposed; but so that
its

its concave edge be upward or turned towards the *pubes*. In obedience to the precept of never applying the blades on the face, it would not be in our power to begin at either side of the *pelvis*, when the head is placed across or obliquely ; because if we did, they must necessarily go on the face and the *occiput*. Let us first examine this method relatively to those positions in which the *occiput* answers to the *pubes*, and to the *sacrum* ; the head occupying the cavity of the *pelvis* either partly or totally.

1746. Every person will perceive the defect of this method, by recollecting what I have said concerning that of *Roonhuijsen*, in the application of his lever. It is evidently impracticable in the case of a locked head, of whatever species it may be ; and cannot be executed when the head is voluminous with respect to the *pelvis*, although not locked in it. At most it could only be done when the head is small and quite free in that cavity : but then why should we make the first branch of the forceps go round two thirds of the interior circumference of the *pelvis*, to arrive at a part where it might be introduced at first with much less trouble than at the other side ? Those who compare the practice of *M. Levret* in this case,

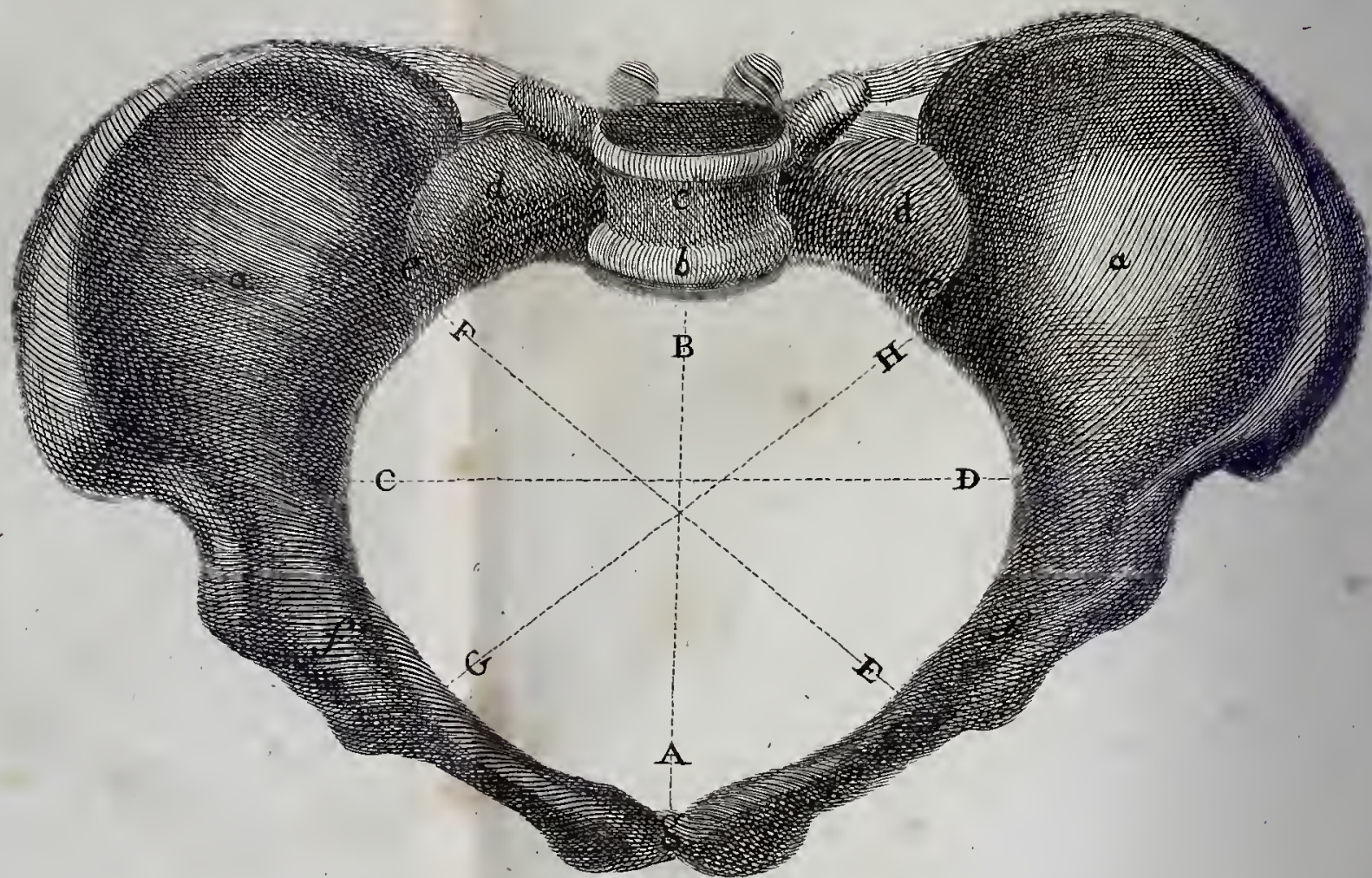
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and many more, with the extended views he displays on the science of midwifery in other parts of his works, will be forcibly struck with the singular contrast between them.

1747. Most accoucheurs, even at this day, know but one method of applying the forceps, though very different from that of *M. Levret*, which I have just exhibited. It is to slide up the blades at the sides of the *pelvis*, without any regard to the situation of the head; so that one of them is sometimes applied to the face, and the other to the *occiput*; at other times on the ears, or so that they grasp the head diagonally according to its greatest length, that is to say, from one side of the forehead and face, to the other side of the *occiput*.

1748. I have observed in par. 1743, that the blades of the forceps ought always to be placed on the sides of the head, except perhaps in one single case which I shall mention in the sequel; but at whatever part of the *pelvis* they are introduced, each of them ought to be preceded by the extremity of one or several fingers, to direct them more certainly to the proper place, and under the edge of the orifice of the *uterus*. There are very few cases where it is necessary to introduce the whole hand into the *vagina* to guide





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guide them thus, even if there were space enough to admit it.

1749. We ought never to apply the forceps till the edge of the orifice be soft and well dilated, or easily susceptible of farther dilatation. The external parts require the same attention, and care. I cannot conceive any case where we ought to have recourse to them before all those parts are in a proper disposition for their application.

1750. We ought never to push the blades of the instrument forcibly in order to carry them to the requisite height. As the obstacles which oppose their progression generally depend only on some folds of the *teguments* of the *cranium*, or of the parts of the mother, we almost always surmount them easily, by varying the direction of the instrument a little. If we sometimes meet with more considerable ones, they proceed from the end of the blade's going with too much force against the head, or against the side of the *pelvis*, so that the curves of the instrument are not exactly adapted to those of the *pelvis* and head. We surmount also these difficulties, by changing the direction which we had hitherto given the instrument; either by raising or lowering the extremity which is without, or by inclining it
3 towards

towards one thigh, or the other, according to the circumstances of the case, which can only be determined by the operator.

1751. The accoucheur who always bears in mind the different curves of the instrument, the form of the body on which he wants to apply it, that of the *pelvis* and the direction of its axis, meets much fewer difficulties than he who pays no attention to all these things, or who is ignorant of them.

1752. When the child's head has already cleared the orifice of the *uterus*, and fills the cavity of the *pelvis*, the fingers of the accoucheur being no longer able to reach the edge of the orifice, to direct the instrument under it, he must carefully observe in the introduction of the blades, to keep their extremities applied as close as possible to the head; in order that they may of themselves pass within the *uterine* circle, and avoid pinching the edge of it in the sequel; and that they may not go against the union of the *uterus* with the *vagina*, which would expose that part to be torn, if we were to attempt pushing the instrument farther up by applying more force.

1753. In all cases, we ought to contrive that the head should be grasped, as much as possible according to its greatest length; that

is to say, so that a line which would divide the *sinus* of the forceps into two equal parts, from the junction of the two branches, to the center of the space between the extremities of their blades, should cross the head obliquely from the posterior extremity of the sagittal *suture*, to the chin, or from the chin to the extremity of the said *suture*; as may be seen in the XVIIIth and XXXVth plates of Smellie, as well as in the eighth of mine.

1754. The pressure which the forceps exert on the child's head while we extract it, must always be relative to the proportion which the dimensions of that part bear to those of the *pelvis*. When the latter is well formed, we must not grasp the head very tight between the blades, but only so much as to prevent their slipping. When the *pelvis* is deformed we must grasp the head more strictly; because it cannot then clear that cavity without diminishing in size, at least in one direction, and without our employing a great deal of force to extract it. It is often necessary in this last case, to bring the handles of the forceps close together, and fix them in that state with a bandage, or a napkin rolled up, which we may wrap round the whole, as far as the parts of

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the woman ; in order to hold the instrument more firmly than we could if it were naked.

1755. When we have applied the forceps on a head stopped or wedged in the superior *strait*, we ought to extract it without expecting any thing from the forces of the mother, and not, after bringing it into the cavity of the *pelvis*, commit the expulsion of it to Nature ; as some have recommended, under the vain pretence of sparing the parts of the woman, and giving them time to dilate : though, strictly speaking, we should then have accomplished the indication we had to fulfil, and the forceps would no longer be indispensably necessary as at first. The parts will be sufficiently prepared for dilatation, if what I have prescribed in par. 1749 has been well observed, and we may besides perform it as gradually with the forceps, and perhaps more so, than is done in a natural labour. And as the parts are under the eyes of the accoucheur, he may observe the progress of their development, and conduct himself with respect to that in the most advantageous manner. I admit that there are cases where it is better to withdraw the instrument when the head begins to appear at the *vulva* : but there are many more in which that precaution would

would be useless; and others also where it is necessary to continue to operate, because the woman, being exhausted, could not deliver herself, notwithstanding the head had already got over the most difficult part.

1756. Whenever we use the forceps, we ought to make the head take a course relative to its position, as I have laid it down from actual observation, in treating of the mechanism of the different species of natural labour; that is to say, that we must make it present only its smallest diameters to the small ones of the *pelvis*. See par. 677, and following, to par. 752 inclusively.

1757. We ought never to pull the forceps in a right line, because that would make the head descend with more difficulty; as the celebrated author of that instrument has already observed. But we ought also to set bounds to the rotatory motions which that accoucheur recommends with a view of *unwrinkling* the *vagina*. It is sufficient to carry the external extremity of the forceps a little towards each of the woman's thighs alternately, at the same time that we pull towards us. We must be equally attentive to raise this same extremity insensibly towards the belly of the woman, in

proportion as the head engages in the inferior *strait* and the *vulva*. At this last period, we ought to hold the instrument with one hand, and apply the other against the *perinæum* to support it, and prevent its rupture, as we do in a natural labour. We ought not to take off the forceps till the *parietal protuberances* of the child have cleared the opening of the *vulva*.

1758. The application of the forceps requiring in general fewer precepts, and presenting less difficulty, as the head is nearer to the external parts of the woman, and *vice versa*, I shall first shew how we ought to act when the head is entirely in the cavity of the *pelvis*; in order to proceed from the simple to the more complex; and describe the different modes of operating more clearly.

ARTICLE II.

Of the Manner of using the Forceps when the Head, presenting the Vertex, is entirely in the Cavity of the Pelvis.

1759. THOSE who are perfectly impressed with the aggregate of the general rules which I have just laid down concerning the use of the forceps, and especially those which are the subject of the paragraphs 1743, 1753 and 1756, must have already perceived that they cannot be applied in the same manner in all cases where the head, presenting the *vertex*, is at the bottom of the *pelvis*; because its sides, on which the blades must be placed, do not always answer to the same points of the *parietes* of that cavity; and because it must take a different course, in some respects, in each position in which it may present: it will therefore be proper to describe in order what is to be done in each of them.

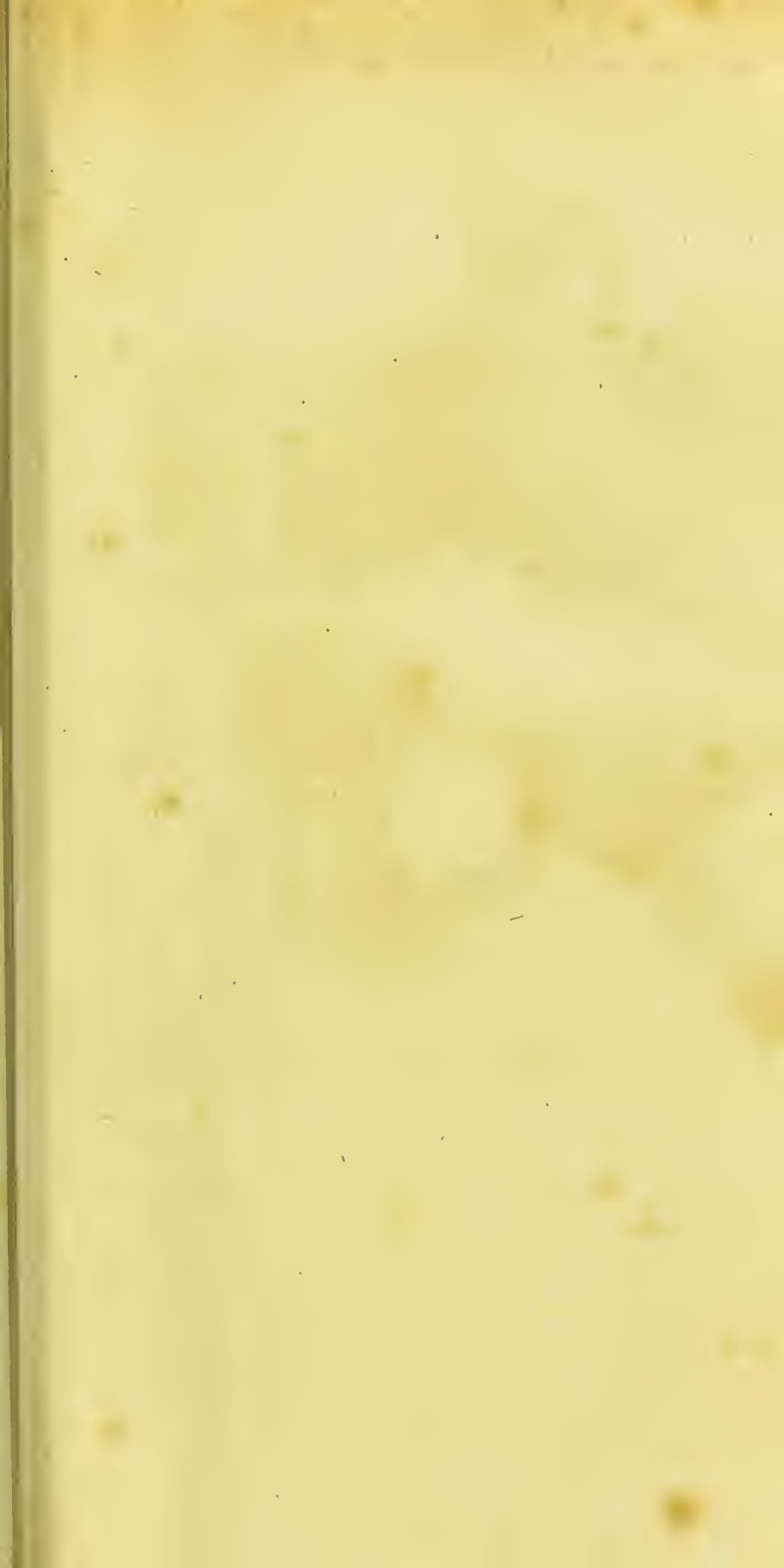
SECTION I.

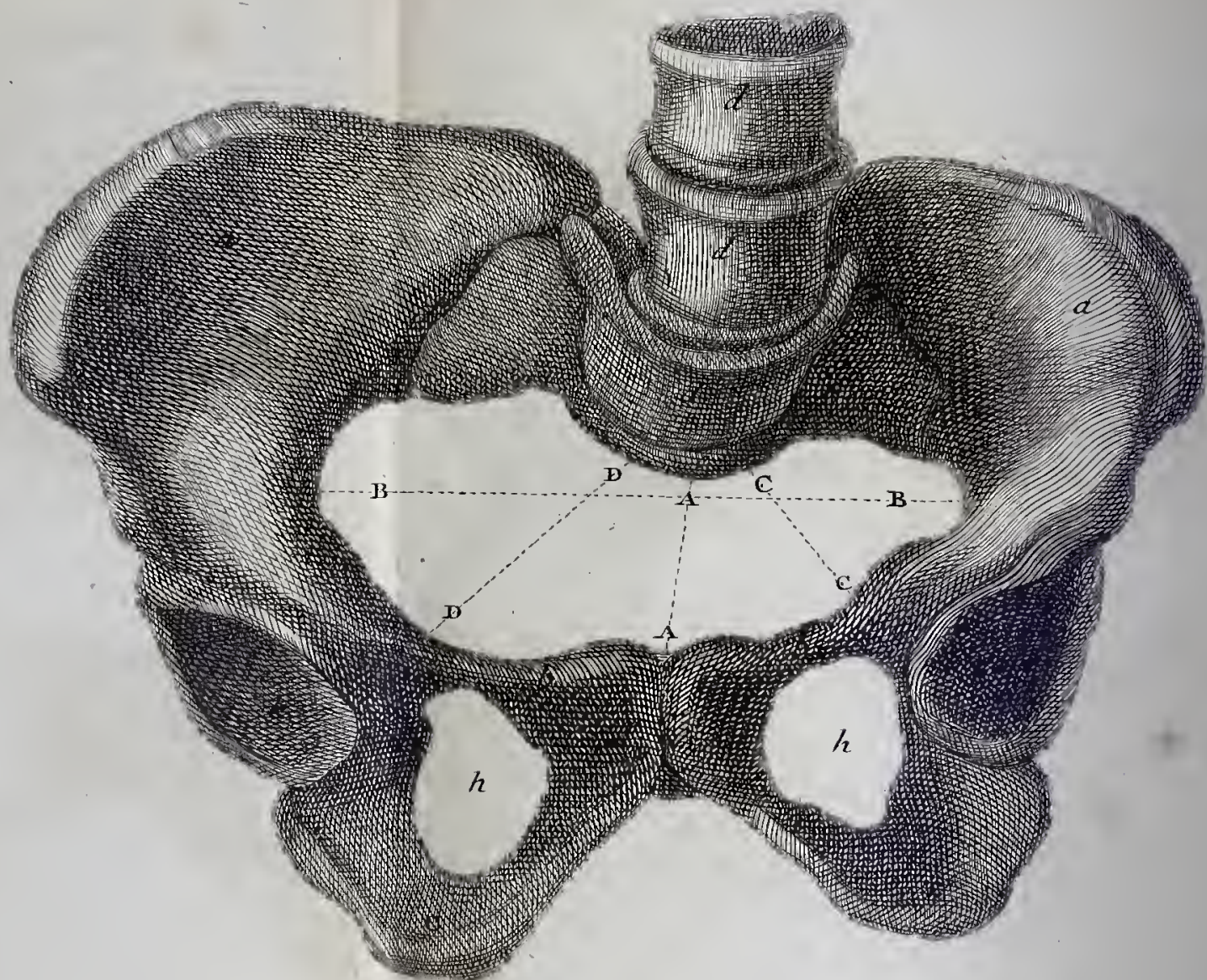
Of the Application of the Forceps in that Position in which the Occiput answers to the Arch of the Pubes, and the Forehead to the Sacrum; and also in that in which the Occiput is against the latter, and the Forehead opposite the Arch of the Pubes.

1760. OF all the positions in which the crown of the head can present at the inferior strait, no one is more favourable for its exit and for the application of the forceps, than that in which the *occiput* answers to the arch of the *pubes*, and the forehead to the middle of the *sacrum*. Whether the head be locked in that direction, or the defect of the expulsive pains, the weakness of the woman, an hæmorrhage, or any other cause, oblige us to have recourse to that instrument, it must be used in the following manner.

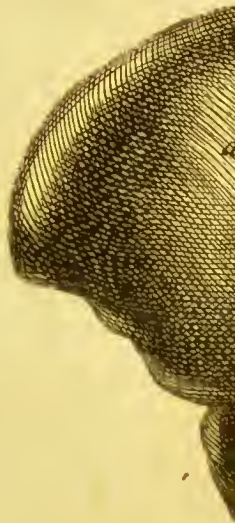
1761. The woman being placed as directed in par. 1739, and the following, and every thing properly prepared, we insinuate the male branch of the forceps towards the left side of the

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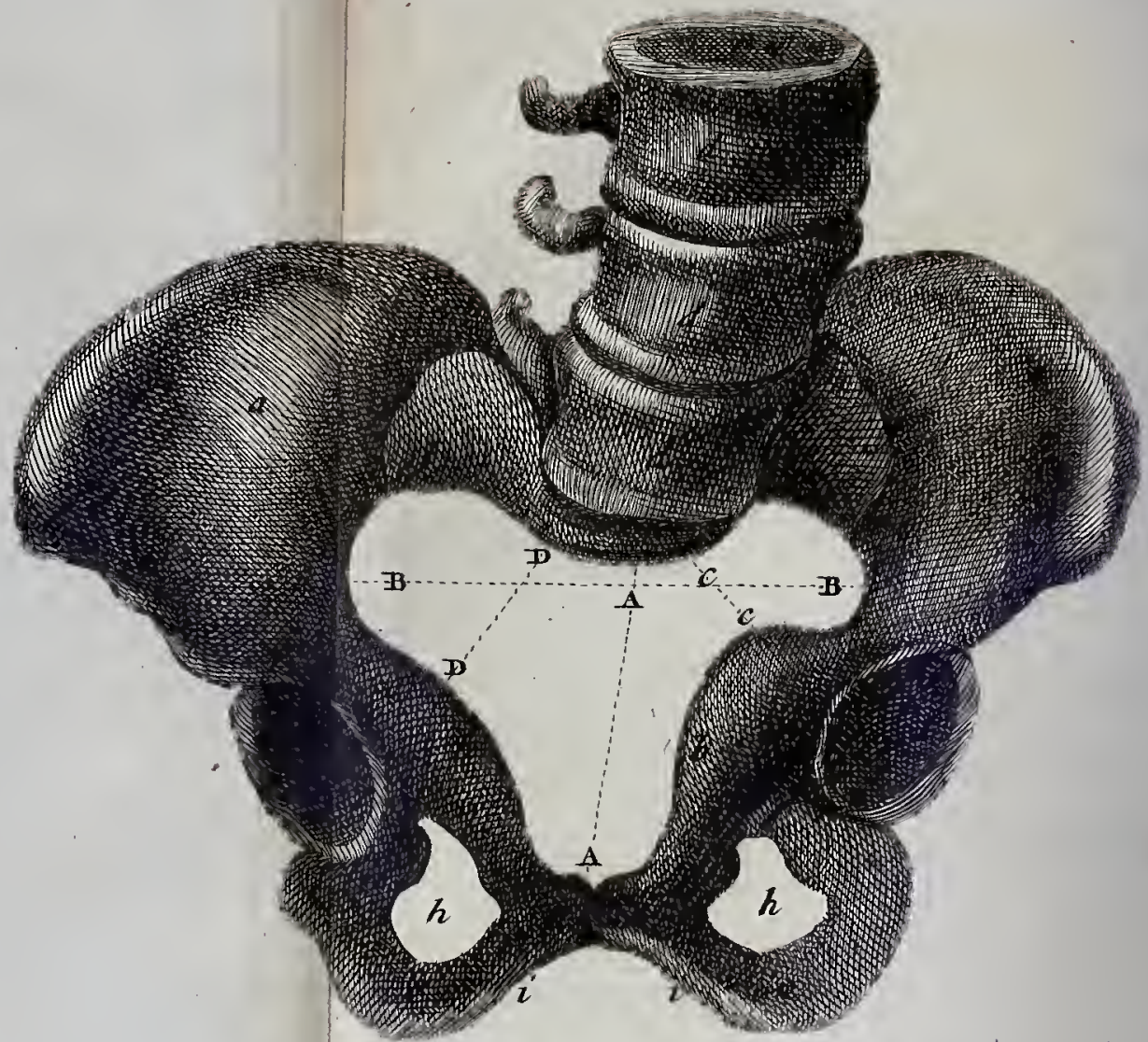




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the *pelvis*, and the other at the right side. We first introduce two fingers of the right hand, or one only under the edge of the orifice of the *uterus*, at the left side, if they can reach it, or if not, as high as possible on the child's head. With the other hand, holding the male branch of the instrument by its middle, nearly as we hold a pen, we present the end of the blade to the *vulva*, its new curve, or concave edge, being turned towards the *pubes*, and its other extremity inclined over the woman's right groin. We slide this blade into the *vagina* along the inside of the fingers which prepare the way for it; and when its extremity has passed them, we begin to change the direction of the external end, and withdraw it a little from the bend of the groin towards which we had kept it inclined. We then lower it insensibly, carrying it towards the woman's left thigh, but only in proportion as the blade advances farther; and we continue this procedure till the blade has penetrated to the height of four or five inches, and the portion of the instrument which is without be nearly parallel to the axis of the woman's *trunk*.

1762. We must slide this branch to the height of four or five inches, that its extremity

may be applied somewhere about the angle of the lower jaw, or near the cheek, as may be seen in the eighth plate. We may be certain that it is thereabouts and that the blade is well placed, if it will not shake easily, and if the pivot answers to the *symphysis* of the *pubes*, though distant from it several inches, if the forceps I have adopted are used; lastly, if in pulling the instrument in a right line, we perceive a kind of resistance at its hidden extremity.

1763. The height at which we ought to keep the end of the instrument which is without, must be varied a little according to the particular direction of the *pelvis* of the woman, and the inclination of its axis relatively to the horizon. Although I cannot give positive rules on this subject, I may say, however, that in the case in question the external extremity ought to be elevated so that the portion of the instrument which is in sight, may form, with a line drawn horizontally from the bottom of the *vulva*, between the woman's knees, an angle of from thirty to forty degrees. See the eighth plate and its explanation. We suppose here the woman laid on her back, with the breech a little elevated. An intelligent assistant
ought

ought to keep this first branch of the forceps in the situation indicated, while we apply the second.

1764. We slide up this last with the same precautions, but holding it with the right hand, and so that the extremity of its handle be at first inclined over the left groin. Two fingers of the other hand, or one only, introduced into the *vagina*, between the head and the right side of the *pelvis*, must guide the blade in its progression. In proportion as it penetrates, we gradually lower the external end, and bring it from the woman's left thigh; so that the opening in this branch destined to receive the pivot of the first, may do it easily, by coming opposite to it. We then unite the two branches, and fix them in that state by giving the pivot a half turn.

1765. We then take hold of the forceps with both hands; that is to say, with the left placed beyond the junction of its branches, near the *pubes* of the woman, and the right at its extremity, as is seen in the eighth plate. We then pull towards us, carrying the extremity of the instrument alternately towards each thigh of the subject; but so that the line it describes in these alternate motions may not
exceed

exceed seven or eight inches; for if we were to make them more extensive, the soft parts that cover the branches of the *ischia* and *pubes*, which serve successively for a *fulcrum* to the branches of the forceps in these different movements, would be very much bruised by the backs of the blades. We likewise raise the end of the instrument insensibly toward the woman's belly, in proportion as the head engages in the inferior *strait*, as I have already observed. When it is advanced so far as to distend the *perinæum*, we must support that with one hand, and pull the instrument only with the other; but acting very slowly, to give the external parts time to unfold, and dilate more gradually. By proceeding thus we make the head describe the same course which it takes when expelled by the efforts of Nature alone, and art should always imitate her.

1766. After the position of the head of which I have just spoken, there is none that requires a more simple procedure than that in which the child's forehead is concealed behind the inferior edge of the *symphysis* of the *pubes*, and the *occiput* lodged in the *sinus* of the curve of the *sacrum*. I have observed in par. 699, and following,

lowing, that this position was, *cæteris paribus*, much less favourable for the exit of the head than the preceding, and that some women experience so much difficulty in delivering themselves without help in this case, that it would often be better to use the forceps, than to expose them, as well as their child, to the danger of so long and severe a labour. If this position of itself, and exclusively of all other causes, ought not to determine us to recur to that method in most women, at least it becomes necessary when any accidents supervene.

1767. The manner of applying the forceps is absolutely the same as that which has been described for the preceding position. We insinuate the male branch at the left side of the *pelvis*, its concave edge upward, and the female branch at the right side. We introduce them to the same height, that is to say, four or five inches; but we hold the external extremity a very little more elevated than in the first case, when we begin to pull the head; in order that the ends of the blades may approach nearer to the sides of the *occiput*, and act more efficaciously on it. If the situation of the forceps conducted on this principle, differs in any thing from what has been remarked in the preceding position,

position, it is that the new curve, placed under the *pubes* of the mother, is then towards the face of the child, and not the *occiput*. We take hold of the instrument, and proceed in the same manner to the extraction of the head, only that we act with a great deal more slowness than in the first case; because the difficulties are in general greater, and the external parts of the woman must suffer a greater extension.

1768. In bringing the head along, we ought to observe carefully to make it describe the same course which it takes in this position, when it is delivered by the powers of the woman alone. Here also the *occiput* must disengage the first, but following another direction. Instead of rising towards the *pubes* as it comes out, it must turn backward toward the *anus* of the woman, as soon as the nape of the neck appears at the lower part of the *vulva*. See par. 703, and the following. Wherefore we must, till that moment, direct our efforts as near as possible to the posterior extremity of the head, and hinder the face from disengaging from under the *pubes*, before the instant indicated.

1769. This

1769. This method of applying the forceps when the child's face is upwards, is avowed by all practitioners; even by *M. Levret* himself, though he proposed another absolutely contrary in his private lectures: a method which an accoucheur who esteems himself happy in having attended those lectures, has lately published as the fruit of his own labour and reflection. It consists in placing the branches of the forceps in a contrary direction to that I have recommended, that is to say, to direct the female branch towards the left side of the *pelvis*, and the male branch towards the right side, so that their concave edge shall be towards the *sacrum*. I am sorry that the limits of this work will not permit me to discuss this method at large, as well as that proposed by *Smellie*, for the same case; that I might expose their inconveniences, and enable all those who apply themselves to the practice of midwifery to estimate them justly.

SECTION II.

Method of using the Forceps in that Position of the Head, in which the Occiput answers to the left Foramen Ovale, and the Forehead to the right Sacro-iliac Symphysis; and in that where the Forehead is behind the left Foramen Ovale, and the Occiput opposite the right Sacro-iliac Symphysis.

1770. I HAVE observed in treating of natural labour, that the head usually descended in the first of these positions, and that the *occiput* turned towards the arch of the *pubes*, only in proportion as it began to engage in the inferior *strait*. When the head does not execute this turn, but preserves its first direction, notwithstanding the violent efforts which tend to expel it, if we cannot make it describe that movement with the finger, we must have recourse to the forceps. We must also use them when any accidents supervene which permit us not to leave the delivery any longer to the efforts of Nature. But the mode of using them must be a little different from that which I have just described.

1771. Those who know but that first method, by placing the two branches of the instrument at the sides of the *pelvis*, grasp the head diagonally from the left lateral part of the *occiput*, to the middle and right lateral part of the forehead; and bring it along so, proportioning their force to the resistance of the obstacles which they sometimes perpetuate, because those obstacles augment in proportion as the head approaches the inferior *strait*. According to the general method of *M. Levret*, we should introduce the female branch of the forceps at the left side of the *pelvis*, and on the *occiput* of the child, to make it pass from thence towards the right side; sweeping it round more than the posterior half of the circumference of that cavity, and at the same time bringing the face under the *pubes*. See par. 1780. By comparing these different procedures with that which I am going to describe, every one will be able to deduce the proper consequences from them.

1772. If the general rules which I have established concerning the use of the forceps be recollected, it will be seen that in this position of the head, the male branch ought to be placed towards the left *ischiatric* notch, and
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the female branch under the right *foramen ovale*, that they may closely embrace the sides of the head. We conduct the first branch with the left hand, holding its external extremity at first very high, and a little less inclined towards the right groin than in the preceding positions. We direct the end of the blade by the help of one or more fingers of the right hand introduced into the *vagina*, beyond the left *sacro-ischiatic* ligament, and we insinuate it in that direction to the height of four inches or thereabouts, making it cross the fore part of the *sacrum* a little, to reach the cheek of the child, whose face is then towards the right *sacro-iliac symphysis*. Whence we see how attentive we ought to be to lower the external extremity, and incline it in the same proportion towards the left thigh; but in such a manner that the point of the pivot destined to join the two branches of the instrument may remain upward, and a little turned towards the woman's left groin: for otherwise, the greatest breadth of the blade could not closely embrace the convexity of the *parietal* region.

1773. We insinuate the female branch with the same care towards the right side of the *pelvis*, but a little forwarder, so that it may pass

pass obliquely behind the *foramen ovale* and under the *acetabulum*. It must be moreover directed in such a manner as to join easily with the first.

1774. The extremity of the instrument is to be kept at a moderate height above the horizontal plane, and inclined at the same time towards the left thigh, the point of the pivot inclining obliquely toward the groin of that side, as may be seen in the ninth plate*. We then take hold of the instrument with both hands, the left placed over it close to the *pubes* of the woman, and the other at its extremity. We compress the head according to the necessity of the case, and turn it in the *pelvis* so as to bring the *occiput* under the arch of the *pubes*; but to do that we must raise the handles of the forceps, making their extremity describe an arch whose convexity would be towards the left thigh, till it comes to the point indicated in par. 1763, and the point of the pivot be

* The woman is always supposed to be laid on her back, with the breech raised by means of a cushion. But if the breast should be higher than the breech, we should be obliged to keep the handles of the forceps much lower than the point assigned. The direction of the canal of the *pelvis* must be the operator's guide.

exactly upward. In general this rotation is easily made. We meet with no obstacles to it, but when the *sacrum* of the woman is flattened, or when the child's head has turned a little backward as it advanced, and the forehead is too low with respect to the *occiput*. In this last case, before we endeavour to turn the head round, we must push up the forehead as much as is necessary, as I have directed in par. 1284 *. After this rotatory motion, the head being reduced to its first position, it is to be extracted as recommended in that position.

1775. There are cases in which we absolutely cannot turn the head in this manner, and in which it would be dangerous not to attempt it cautiously, but to persist in it, using a great deal of force: those cases are excessively rare, and I have met with them, at most, but five or six times. In several of those women, I have seen the head come forth, after a very long labour, in a diagonal situation with respect to the inferior *strait*; and in the others, I have extracted it by means of the forceps, in a similar position, after having endeavoured to

* We ought to attend to this circumstance in all other diagonal positions of the head, when we find any difficulty in making it turn on its axis.

turn it round and bring the *occiput* under the *pubes*. These cases happen when the *sacrum* is straight, flat, and destitute of that curve which gives the middle of the *pelvis* more space than the *straits* have in the direction from before backward.

1776. Though I place next in order, the position in which the *occiput* answers to the right *sacro-iliac* junction, and the forehead to the left *acetabulum*, it is not because it is the most frequent of all the diagonal positions which the head is capable of taking with respect to the inferior *strait*, after that which I have just described; but because these two positions are exactly the same, if we only consider the relation between the dimensions of the head and those of the *pelvis*; and because the forceps must be placed in the same manner. For in both, the greatest length of the head is parallel to the same oblique diameter of the *pelvis*; one ear answers to the right *foramen ovale*, and the other to the left *ischiatric* notch: it is before the latter and behind the former that we must insinuate the blades to grasp the head properly.

1777. We must then place the male branch at the left side of the *pelvis*, and a little back-

ward; the female branch at the right side and forward; with the precaution of keeping the external extremity, after their junction, inclined towards the woman's left thigh, in the same manner as directed in par. 1774. Before we make any effort for extracting the head, we must bring the forehead under the *pubes*, by making it describe about the sixth of a circle, as the *occiput* did in the preceding position; and after this rotation, we must act in the manner laid down for the second position. See par. 1768.

1778. We ought never in this position to endeavour to turn the child's face towards the *sacrum*; because it could not arrive at it without passing over a good third of the internal circumference of the *pelvis*; and that movement could not be executed without giving the child's neck a dangerous, and perhaps a mortal twist: as we may be easily convinced, if we pay attention to the limits which Nature has set to the rotatory motion of which the head is susceptible.

SECTION III.

Method of using the Forceps, 1. in that Position in which the Occiput answers to the right Foramen Ovale, and the Forehead to the left sacro-ischiatic Notch; 2. in that in which the Occiput is placed opposite the said Notch, and the Forehead behind the right Foramen Ovale; 3. when the Crown of the Head is situated exactly across at the inferior Strait.

1779. WHEN circumstances require us to recur to the forceps in that position of the head in which the *occiput* answers to the right *foramen ovale*, we must insinuate the male branch obliquely behind the left *foramen ovale*, holding it with the left hand, and directing it with some of the fingers of the right introduced towards that part. In proportion as it penetrates, we lower its external extremity, which we held very high at first, and inclined towards the right thigh, but so that the point of the pivot which serves for its junction with the other branch, may always be towards the

groin of that side. We afterwards slide up the other branch, which we hold with the right hand, between the child's head, and the right *sacro-ischiatic* ligament of the mother, directing it with one or more fingers of the left hand. We pass it on in the direction of the *sacro-iliac symphysis* of that side, crossing the fore part of the *sacrum* a little, and observing to lower the external end in proportion as it penetrates, till the opening destined to receive the pivot of the first branch, meets it; we then join them together, and fix them; and afterwards take hold of the extremity of the instrument with the left hand, and place the right towards its middle, near the parts of the woman; then we turn the head in the *pelvis*, in order to bring the *occiput* under the arch of the *pubes*, to extract it afterwards as if it had presented originally in the first position. See par. 1765.

1780. The method proposed by *Smellie* for this position of the head is excessively complicated. That which *M. Levret* prescribed to his disciples, consists in first introducing the male branch of the forceps at the right side of the *pelvis*, its new curve being turned downwards;

wards; and afterwards passing towards the left side; making it take a sweep of more than half the internal circumference of that cavity, keeping it so closely applied to the head as to turn it round and bring the face under the *pubes*. He then would have the second branch passed up where the first had penetrated; but so that its concave edge might be towards the *pubes*. This method, which is not practicable but when the head is quite at liberty in the *pelvis*, is as difficult as mine is simple and easy; besides, it is not conformable to the true principles of the art; because the child's face cannot be placed under the *pubes* but by passing round at least a third of the internal circumference of the *pelvis*, while the *occiput* is not more than a sixth from it, at most; and because the exit of the head is much easier when that presents at the *pubes* than when it is the forehead. I might have made the same observation concerning the position in which the *occiput* answers to the left *foramen ovale*. See par. 1771.

1781. The relation of the dimensions of the head to those of the *pelvis*, being absolutely the same in the position in which the forehead answers to the right *foramen ovale*, and the

occiput to the left *ischiatric* notch, as in the preceding, the forceps must be applied according to the same principles, when circumstances require their use. We are then to introduce the male branch under the left *os pubis*, passing it up obliquely behind the *foramen ovale*, and the female branch before the right *sacro-iliac symphysis*; always keeping their external extremities inclined towards the thigh of this last side. We then take hold of the instrument with both hands, disposed in the manner indicated at the latter end of par. 1779: and turn the head the same way that is directed in that paragraph, not to bring the *occiput* under the arch of the *pubes*, as is prescribed in that case, but the forehead; in order to finish the delivery as in the position mentioned in par. 1768.

1782. It is excessively rare for the child's head to present its greatest length exactly across at the inferior *strait*, so as for one ear to answer exactly to the *symphysis* of the *pubes*, and the other to the middle of the *sacrum*. And the best method of applying the forceps in that case, differs so little from what I have recommended for the diagonal positions, that I might have confined myself to them, without leaving
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a great deal to be added after me. These transverse positions can only be two in number: in one the *occiput* answers exactly to the left side of the *pelvis*, and in the other to the right.

1783. To apply the forceps conformably to the principles I have established, we are to introduce the female branch of the instrument directly under the *pubes*, and the other before the *sacrum*, in the first of these two cases; always keeping their external extremities inclined towards the left thigh of the woman. When they are well placed, united, and fixed, we take hold of the end of the instrument with the right hand, and the middle part with the left; then turn the head so as to bring the *occiput* under the *pubes*, and afterwards extract it in the manner directed for the most favourable position.

1784. In that transverse position, in which the *occiput* answers to the right side of the *pelvis*, we must introduce the male branch of the forceps directly under the *pubes*, and the female before the *sacrum*; with the precaution of inclining the extremities of both towards the right thigh of the woman. Having then taken hold of the middle of the instrument with the

the

the right hand, and of the extremity with the other, we turn the *occiput* under the arch of the *pubes*, as in the preceding position; and terminate the delivery in the same manner.

A R T I C L E III.

Of the Use of the Forceps, when the Child's Head is still above the superior Strait.

1785. WE find few authors among those who have written on the art of midwifery, who have proposed using the forceps, while the child's head is still above the superior *strait*, and preserves all its mobility. *Levret* has not mentioned it, but *Smellie*, on the contrary, has left us little to wish for on the subject; it is to him we are indebted for the idea of carrying the forceps so far: and I am sorry that the French accoucheurs, who have spoken of it since, have not followed the path which he traced for them, at least with regard to the greater part of the positions in which the head may then present itself. *Smellie* proposes a particular

ticular method for each of those positions, but the latter adopt only one, which they apply indifferently to all cases, whether convenient for them or not. That method may be perceived through the cloud which envelops it in one of the latest publications; in which the author says, that no one before him had used the forceps while the head remained above the superior *strait* *: I shall unveil it in the sequel. We ought not to confound these cases with those in which the head is wedged in the superior *strait*, because they are very different. The latter will make the subject of a particular article.

S E C T I O N I.

Causes which ought to determine us to use the Forceps, while the Head is still above the superior Strait; and general Rules to be observed in it.

1786. IT is often so difficult for those who are not well versed in the use of the forceps,

* Observ. sur l'Operation Cefarienne faite à la Ligne Blanche, & sur l'Usage du Forceps, la Tête arrêtée au Déroit superieur. . . . *M. de Leurie*, 1779.

to take a good hold of the head with that instrument, when it is still above the *pelvis*, and so many inconveniences may result from it, that we ought never to attempt it but when the circumstances, which complicate the labour, leave us no hopes of employing any method more gentle or more certain. Although the difficulties are less for those who have a rational habit of using the instrument, who perfectly know its relations to the child's head and the *pelvis* of the mother, they are nevertheless great enough to prevent our preferring it to other methods sometimes equally practicable. The accidents which require us to deliver, while the head is still far off, are not sufficient to determine us to give that preference to the forceps. A defect of size in the superior *strait*, relatively to the volume of the head, ought alone to induce us to do it; and even then there ought to be space enough to give hopes of bringing the child with less danger, than by turning it, and extracting it by the feet.

1787. Although there are fewer accidents to be feared in carrying the forceps so far, when the *pelvis* is well formed, than in the contrary state, since there is more space for applying

plying them, and the parts of the woman, as well as the child's head, will not suffer so strong a pressure from them; yet we ought not in that case to use them; because the more moveable the head is over the brim of the *pelvis*, the more difficult it is to take hold of it properly. The extraction of the child by the feet then merits the preference, after the usual preparations, if the state of the *uterus* requires them: that method is more easy for the greater part of practitioners, and safer for the woman, in their hands, than the use of the forceps.

1788. If we are not founded in preferring the forceps, but when the superior *strait* is contracted, neither are they always proper when it is so much so that the head cannot engage in it; an extreme deformity much less admitting the use of that instrument than a good conformation. In the latter case, we only reject it because it seems preferable to turn the child, and because its application requires an extent of knowledge which the greater part of those who devote themselves to the practice of midwifery do not possess, and which they cannot acquire by reading: in the other case it is totally inadmissible. "It will also very rarely succeed," says one of the most modern authors,

thors, “ if the child be dead ; because the
 “ head being no longer elastic, will not give
 “ resistance enough to preserve the position of
 “ the instrument*.” But there would be
 much fewer inconveniences in using it than
 when the child is alive, if its death, when cer-
 tain, did not authorize us to use crotchets, or
 any other instrument of that kind preferably.
 The head of the child, when dead, may have
 the same solidity as when living, and conse-
 quently allow the same hold to the instrument ;
 it is not soft and inelastic but when the putre-
 faction has made some progress. The observa-
 tion of the same author concerning the tume-
 faction of the hairy scalp, which he regards as
 an obstacle to the intromission of the blades of
 the forceps merits less attention still ; what-
 ever be the volume of such a tumour, it can
 never oppose the just application of that instru-
 ment. If any thing ought to determine us to
 use this instrument before the tumefaction of
 the *teguments* of the *cranium* take place, it is
 that we cannot employ it too soon, when the
 delivery cannot be performed without it : if a
 tumor of the species mentioned by *M. de*
Leuric, ought to induce us to reject it, it is

* *M. de Leuric.*

because it denotes the death of the child, and that we may then use the crotchet. See however par. 1897, and the note on par. 1909.

1789. We ought to take great care in all cases, but particularly in that where the narrowness of the superior *strait* obliges us to recur to the forceps, to fix its branches in such a manner, that we may by their help place the diameters of the head in a proper relation to those of the *pelvis*, and diminish, according to the necessity of the case, that which is to pass in the direction of the smallest diameters of the *straits*: which I shall more particularly exemplify in the following sections. I shall suppose in all these cases that the length of the smallest diameter of the superior *strait*, is less than three inches and an half, and more than two inches three quarters.

SECTION II.

Method of using the Forceps in that Position of the Head in which the Occiput rests on the Top of the Symphysis of the Pubes, and the Forehead against the Sacro-vertebral Angle; and in that where the Occiput answers to the said Angle, and the Forehead to the Pubes.

1790. IN the first of these positions, which is excessively rare at the beginning of labour, the impossibility of the woman's delivering herself without help, often arises much less from the bad conformation of the *pelvis*, than from the manner in which the child's head presents itself to it. It is then its greatest diameter which tends to pass in the direction of the smallest diameter of the superior *strait*, which cannot take place, unless this last be nearly of its natural length. To change the direction of the head, would be sufficient to put the woman into a condition to deliver herself without farther help, if the bad conformation of the *strait* in question were but moderate, and left it three inches and a quarter, or three inches and an half in its little diameter.

1791. When we judge the use of the forceps preferable

preferable to any other method, we must apply the blades to the sides of the head, sliding them up along the lateral parts of the *pelvis*, to an equal height; which must be seven or eight inches at the least, if we would have them grasp the head closely and properly. My rule on this subject, when the forceps I have adopted are used (see par. 1598), is to slide up the branches, till the part destined for their junction touches the edges of the *vulva*.

1792. As it is difficult to reach high enough on the sides of the head, to direct the blades of the forceps with certainty, by passing only two fingers into the *vagina*, as directed in all the cases stated in the preceding article, we may introduce the whole hand except the thumb, which however is not absolutely indispensable; for two fingers are almost always sufficient, or even one. As we ought to introduce the male branch of the forceps first, and hold it with the left hand, we introduce the fingers of the right hand under the edge of the orifice of the *uterus*, before the left *sacro-iliac symphysis*, to guide the end of the instrument thither. When we have carried the instrument a little beyond the ends of the fingers, we are to bring it exactly on the side of the head, and of the

pelvis ; but by slow degrees, and in proportion as it penetrates farther. We are to observe at the same time to lower the extremity which is without, and much more than if the head occupied the cavity of the *pelvis* ; setting however different bounds to it, according to the particular inclination of the *pelvis* of the woman relatively to the horizon, and according as the curve of the *sacrum* shall be more or less considerable, &c. : which can only be determined by the operator himself.—See the tenth plate, and its explanation.

1793. The female branch is to be placed with the same care on the other side, conducting it with the right hand, while with some of the fingers of the left, introduced at the entrance of the *uterus*, we direct its extremity within the neck of that *viscus*, opposite the right *sacro-iliac symphysis*, from whence it is to be brought insensibly opposite to the other branch ; so that at first it covers the side of the forehead, and afterwards the *parietal* convexity.

1794. The two branches being united, we are to compress the head as much as is necessary, by bringing their extremities more or less together, and fixing them so by means of a
garter

garter or the corner of a napkin. We are then to turn the length of the *cranium* from the direction of the little diameter of the superior *strait*, inclining the *occiput* towards one of the sides of the *pelvis*, or if the *strait* be moderately narrow, only as far as the *acetabulum*: but preferably to the left. In order to that, we are to hold the instrument with both hands, the right placed at its extremity, and the left near the parts of the woman, in such a manner that the fore-finger of the latter introduced into the *vagina*, may constantly touch the top of the head, between the two blades. The greatest care must be taken, in proportion as we turn the head over the superior *strait*, to lower the handles of the forceps, as much as the external parts of the woman will permit, carrying them, at the same time, insensibly towards the left thigh.—See the eleventh plate, and its explanation.

1795. It is in this direction, downward and towards the woman's left thigh, that we must pull the instrument to bring the head into the lower part of the *pelvis*. Without that precaution we should not succeed, either in changing its position, or bringing it down; and we should exceedingly bruise the internal soft parts of the *pelvis*; as we may be convinced by only

reflecting on the natural direction of that bony canal. It is the ignorance of most accoucheurs, in this respect, which has rendered their efforts fruitless; which has induced them to think and publish that the forceps cannot be usefully applied while the head is still above the *pelvis*, and to accuse those of insincerity who affirm that they have reaped the same advantage from them then, as when it occupies the bottom of the *pelvis*. The precautions I have recommended are so necessary, that the omission of only one may render all the rest useless.

1796. When the head is come into the cavity of the *pelvis*, we raise the extremity of the forceps a little, but keeping it nevertheless inclined towards the woman's left thigh. Afterwards we change the direction of the head again, and bring the *occiput* under the arch of the *pubes*, over which it was at first: proceeding for that purpose, and in the sequel, as directed in par. 1774, and following.

1797. If, contrary to all expectation, the superior *strait* should be found narrower from side to side, than from before backward, as it has been seen, though very rarely, we ought to bring down the head in its primitive direction: but then it would be proper to raise the forehead

forehead as much as possible above the *sacro-vertebral* angle, that the top of the *occiput* may present more perpendicularly at the superior *strait*. By that means, it will be the height of the head taken from the summit to the base, which will correspond with the diameter which goes from the *pubes* to the *sacrum*, and not the length of the *cranium* as before ; which will render its descent much easier.

1798. The position in which the forehead rests against the top of the *symphysis* of the *pubes*, and the *occiput* on the *sacro-vertebral* angle, is still more rare than the last. It is also less favourable for delivery, because the face is upward, and after having turned it on one side, to favour the passage of the head through the superior *strait*, we cannot dispense with bringing it back again under the *pubes*.

1799. We must operate in the same manner as in the preceding case, with respect to the application of the forceps. We place the blades on the sides of the head and of the *pelvis*: we introduce them to the same height, and in the same direction ; we take hold of the instrument also with both hands, when we are to displace the head and bring it down. With respect to the head, we make it take a different course

from that which we give it in the first position ; for it is not the *occiput* here which we turn away from over the *symphysis* of the *pubes*, and which we carry towards the left side of the *pelvis*, to bring it back again afterwards under the arch, it is the forehead which must follow that course. There would be no hope of extracting the child alive, if we carried the face towards the *sacrum*, either before or after the passage of the head through the superior *strait*, as *Smellie* recommended ; because of the violent twist which the neck would undergo, the *trunk* not being able to follow the movement which the instrument would then give to the head.

1800. If the method of applying the forceps in a contrary direction, that is to say, their concave edge turned towards the *sacrum*, proposed in that position of the *vertex*, in which the face is upward, is not practicable without many inconveniences, when the head occupies the cavity of the *pelvis*, it would be absurd to attempt it in the present case,

SECTION III.

Method of using the Forceps when the Head, retained above the superior Strait, presents the Occiput at the left Side, and the Forehead at the right: and also when the Forehead answers to the left Side, and the Occiput to the right.

1801. THE greatest length of the head seldom presents so diagonally at the entrance of a *pelvis* contracted in its little diameter, as we find it in a natural labour; nor is it more common to find it exactly transverse. But suppose that its great diameter should cut the superior *strait* obliquely in this case, as in that where the *pelvis* is well formed, it could not remain in that diagonal situation during the application of the forceps; because, being moveable on the superior *strait*, it yields to the pressure exerted on one of its sides, by the introduction of the first blade of the instrument, and places itself so nearly across, that we may, with respect to the application of the forceps, consider it in that situation.

1802. If the child's head, resting on the margin of a contracted *pelvis*, could be fixed in

one of the diagonal positions which we generally observe when the *pelvis* is well formed, we might apply the blades of the forceps much more easily on the *parietal* regions, by following the rules which I have laid down respecting each of those positions, when the head occupies the lower part of the *pelvis*: observing only to slide the instrument higher, and lower its external extremity more. The forceps might be applied with still much less trouble, if we could previously, with the hand, reduce the head to one of the positions which I have described in the preceding section; that is to say, bring the *occiput* or the forehead over the *pubes*; as is clearly seen by considering the relation of its dimensions to those of the superior *strait*: but, unfortunately, the time when we might hope to do that, is often long elapsed, when we are called to operate. I shall then consider all these positions as transversal, or nearly so, since it is in that direction, as we have already seen, that the length of the head must be placed to bring it down, when the superior *strait* is contracted to the degree stated in par.^o 1789.

1803. *Smellie* advises, in these positions, to carry one blade of the forceps under the *pubes*,
and

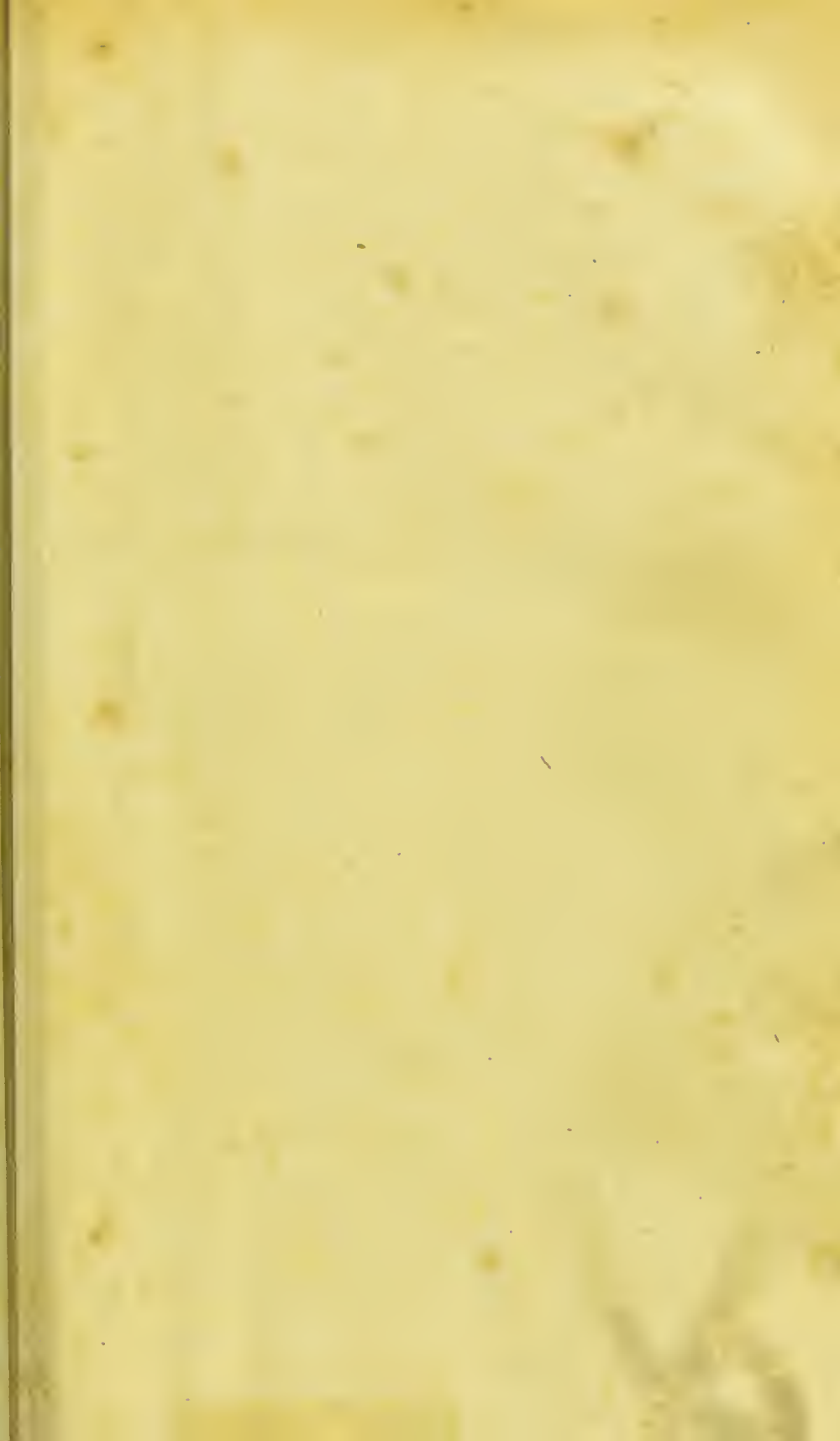


Fig. 1.

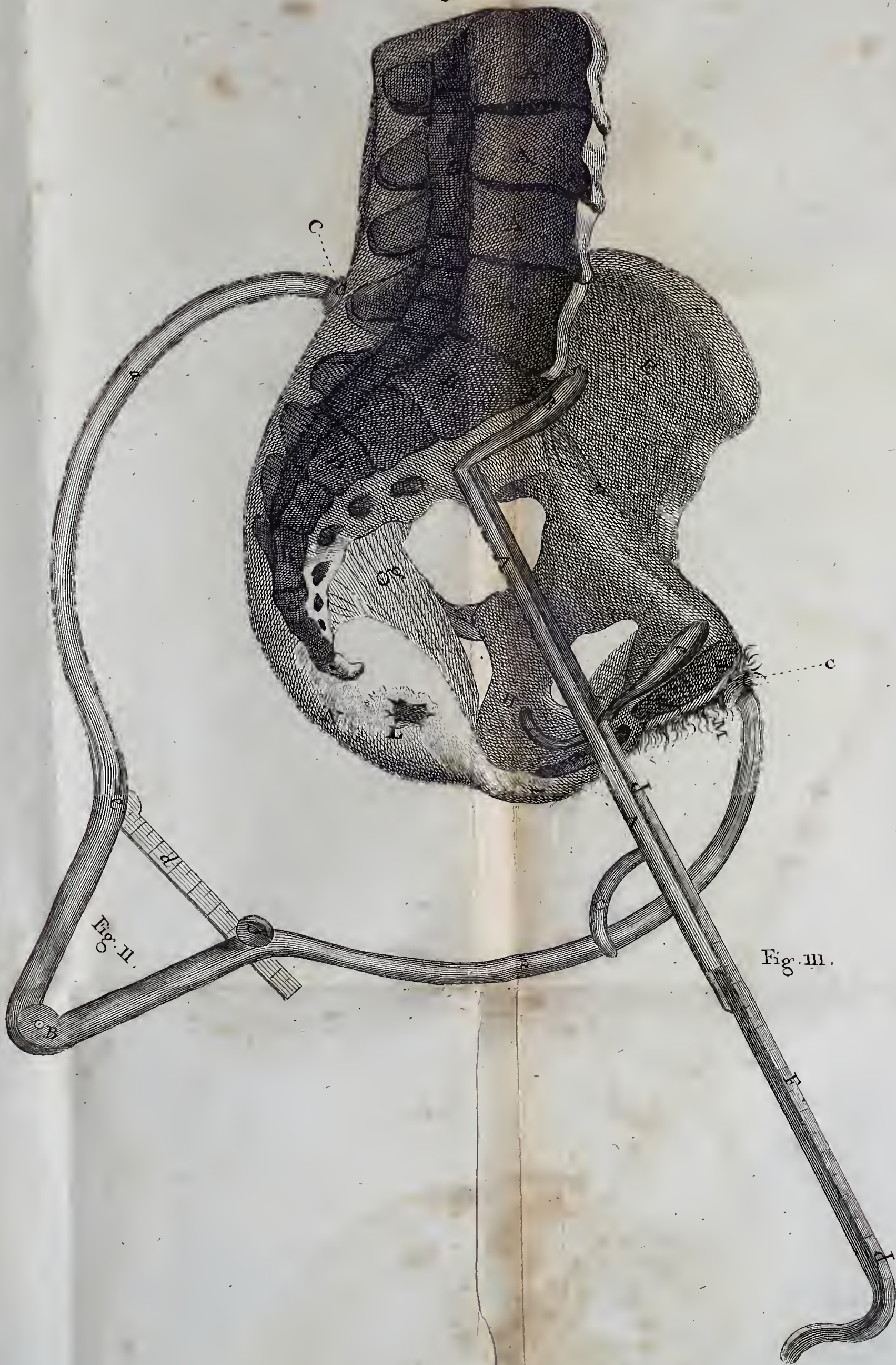


Fig. II.

Fig. III.

and the other before the *sacrum*, but without determining which of the two; a distinction which indeed it was not necessary to make if he used his straight forceps, but which becomes very necessary when we use the curved ones; as we shall see in par. 1807. *M. de Leurie*, whose work is almost the only one since that of *Smellie*, which contains any precepts relative to this circumstance, proceeds very differently. He recommends, though in a manner sufficiently obscure, to place the blades of the forceps at the sides of the *pelvis*, consequently on the face and *occiput*; and seems in all his cases not to have applied them otherwise*.

1804. The defects of that method must appear here in the clearest light. Besides the danger of applying one of the blades of the forceps on the face, and the little hold which the other can have on the *occiput*, the instrument placed in that manner cannot diminish the thickness of the head, in the direction which must pass between the *pubes* and the

* Observ. à la suite de celle sur l'Operation Césarienne à la Ligne Blanche, & la nouvelle édition de l'ouvrage du même auteur, § 796.

sacrum; but rather tends to augment it, if it be true, that compressing the head in one direction, obliges it to lengthen in another, according to the opinion of the same author. This method, far from destroying the disproportion which obstructs delivery, must produce a contrary effect, and only increase the obstacles in proportion to the force employed to surmount them: whether the head, pressed from the forehead to the *occiput*, augments from side to side, or its transverse thickness remain the same. If, at length, we are able to succeed, it can only be by employing force enough to oblige the head, pressed in its descent by the *pubes* on one side, and the *sacrum* on the other, to contract itself transversely. This diminution is always much more dangerous than that which the blades of the forceps, applied immediately on the sides of the head, would produce; because the *cranium* diminishes at the same time in that direction, and in that in which the instrument acts: whereas, in my method, it is only compressed from one *parietal protuberance* to the other, the *occiput* and the forehead being free, towards the lateral parts of the *pelvis*. In the method of *M. de Leurie*, being pressed in four different directions when it

it engages in the superior *strait*, viz. by the two branches of the forceps, which act on the forehead and *occiput*, and by the *os sacrum* and *pubes* which resist, if it loses equally both in its length and thickness, the extent of the cavity of the *cranium* must be considerably diminished by it, and the brain more or less compressed: which exposes the child to a thousand accidents, from a part of which, at least, we may save it by applying the blades of the forceps on the ears.

1805. The method which I have just analyzed, can have no advantage over that which I shall describe hereafter, except with respect to the introduction of the blades of the forceps, which is done, I confess, a little more easily that way. If there is a possible case in which that method is the only proper one, it is when the head is so wedged, with its smallest diameter between the *pubes* and *sacrum*, that it cannot be pushed above the *pelvis*, as *Smellie* recommended, in order to place the blades of the forceps on the ears. This species of locking certainly did not exist in the women whom *M. de Leurie* delivered with the forceps; for if that had been the case, he would no longer have the merit of having applied the instrument

instrument on a head free above the superior *strait*; but only on one engaged a third, and even the half of its height, as many accoucheurs had already done: and in that case I should have done more than he.

1806. To operate conformably to the principles dictated by the very nature of the obstacle which opposes delivery, in the transverse positions of the head in question, we must place the blades of the forceps on the ears; consequently, one before the *sacrum*, and the other under the *pubes*. The introduction of the first is easy enough, but that of the second requires care, knowledge and dexterity.

1807. It is not indifferent whether we place the male or female branch behind the *pubes*; because their relation to the head must be such, that the concave edge may be towards the *occiput* which is to be brought under the arch of the *pubes*, as soon as the head has cleared the superior *strait*: and we should not be able to effect that if the concave edge were not toward the *occipital* region. We must then place the female branch under the *pubes*, and the male branch before the *sacrum*, whenever the *occiput* answers to the left side of the *pelvis*. It is also necessary to introduce that first which is

to

to be under the *pubes*, because the difficulties which oppose its progression towards that part, would be augmented by the presence of the other branch if that were already introduced behind, that is to say, before the *sacrum*.

1808. To place the first properly, we must begin by directing it with some of the fingers of the left hand introduced into the *vagina*, under the edge of the orifice of the *uterus*, before the right *sacro-iliac symphysis*; and advance it in that direction till the blade closely embraces the side of the forehead. It is not till then that we ought to begin to bring it towards the *pubes*, to place it under the *symphysis*, by passing it over the face and temple of the child. But to make it execute that movement more easily and certainly, we ought to apply the fingers, introduced into the *vagina*, under the convex edge of the blade, and push it from behind forward with respect to the *pelvis*; while, with the other hand, we lower the external extremity as much as we can, turning the point of the hook which terminates it insensibly downwards, till it be directly towards the floor.

1809. Before we withdraw the fingers from the *vagina*, which have served for a guide to
the

the first blade, we insinuate the second along the *sacrum*, and within the posterior edge of the orifice of the *uterus*; placing it in such a manner relatively to the body of the other, that when it is introduced to a proper height, they may naturally join. It is also to be held with the right hand, the handle very high and inclined towards the left *os pubis*, the end of the blade low, and its concave edge obliquely regarding the woman's left thigh. It is to be introduced flat, under the head and passed up along the *sacrum*; which is to be effected by insensibly lowering the handle which at first was held very high.—*See the eleventh plate, and its explanation.*

1810. As to the extraction of the head, it must be performed as I have prescribed in par. 1795, and following.

1811. The position in which the *occiput* answers to the right side of the superior *strait* being the same as the preceding, as to the relation of the dimensions of the head to those of that *strait*, we must use the forceps agreeably to the principles established for that. But the male branch must be placed under the *pubes*, and the female branch before the *sacrum*; in order that their new curve may answer to the
occiput,

occiput, which must be brought under the anterior arch of the *pelvis*, as soon as the head shall be descended into that cavity.

1812. We first insinuate the male branch before the left *sacro-iliac* junction, directing it within the edge of the orifice of the *uterus*, by means of some of the fingers of the right hand; for we must hold this branch with the left. We slide it up in that direction till the blade embraces the top of the forehead; from whence we bring it insensibly behind the *symphysis* of the *pubes*, and on the side of the head which answers to it; pushing it toward that part with the ends of the fingers placed against its convex edge, while we gently lower the extremity which is without. We afterwards introduce the second blade under the head, along the anterior face of the *sacrum*, and directing it so that it may unite easily with the first. The operator who bears in mind the degree of curve in the edge of each blade, will doubtless know that he cannot place them properly, and especially the second, without keeping the external extremity of the instrument at first very high, and at the same time inclined towards the woman's left groin.

1813. The forceps being applied, we proceed

ceed in the following manner to the extraction of the head. We take hold of the instrument with both hands, that is to say, with the left placed at its extremity, and the right as near as possible to the parts of the woman, so that the fore-finger passed into the *vagina* between the two blades may touch the head. We first pull downwards, carrying the extremity of the instrument a little towards the under part of the woman's right thigh, till the head has cleared the superior *strait*; but then we raise the end of the instrument more or less. When it entirely occupies the bottom of the *pelvis*, we turn it on its axis to bring the *occiput* under the *pubes*, and finish its extraction as prescribed in the preceding position.—See par. 1795, and the following one.

A R T I C L E IV.

Method of using the Forceps, when the Head presenting the Vertex, is wedged in the superior Strait.

1814. HITHERTO we have spoken of the use of the forceps, only in cases where the

Head of the child was free in the cavity of the *pelvis*, or above the superior *strait*; it is now time to treat of those in which it is locked in that *strait*. Although this state differs little from that in which the head is still above the *pelvis*, as to the application of the instrument, yet in order to explain them with more clearness and precision, I thought it best to treat of them in two separate articles.

1815. I shall repeat, here, that the child's head may be locked either with its length, or its thickness, between the *pubes* and *sacrum*, and that it must then be in one of the four positions stated in the preceding article.

S E C T I O N I.

Method of using the Forceps, when the Head is locked lengthwise, between the Pubes and Sacrum, superiorly.

1816. THE head locked lengthwise, may present the *occiput* or the forehead against the *pubes*, which constitutes two positions essentially different, but which are the same were

we to consider them only with respect to the relation which the dimensions of the head bear to those of the *pelvis*, and the mode of operating necessary to terminate the delivery. In both, the longitudinal diameter of the head is parallel to the little diameter of the entrance of the *pelvis*; in both it is the *occiput* and forehead which are in contact with the anterior and posterior parts of that cavity, while the sides are free.

1817. For the head to be locked in that direction, the little diameter of the superior *strait* must be of such an extent, that the head might pass it without much difficulty, in a transverse position: which indicates the course we ought to make it take with the instrument, in order to extract it.

1818. We must place the branches of the forceps on the sides of the head and of the *pelvis*, with the same precautions laid down in the second section of the preceding article, par. 1791, and following; except that they are not to be passed so high by about an inch and an half; and when fixed, we are to keep the handles a little less downward and backward than directed in par. 1792, 1795, &c. We ought never to attempt to bring down the head

in either of these two positions ; because by pressing it on the sides with the forceps, far from diminishing its length from the forehead to the *occiput*, it must augment the force of the contact of those parts with the *sacrum* and the *pubes* ; increase the frictions of the head, and render its descent more difficult and laborious, both for the mother and child. We must then begin by giving it a transverse situation, in order to place its smallest diameter in the direction of the smallest diameter of the superior *strait*. To procure this change with less difficulty, we are to unwedge the head, by making it rise above the part where it is locked, which is easily done ; not by pushing it directly upwards with the forceps, but by shaking it a little, and carrying the extremity of the instrument alternately and repeatedly towards each of the woman's thighs ; in the same manner as we would shake a nail to draw it with a pair of pincers *. We may be convinced of the possibility of unwedging the head, and pushing it up, by shaking it in this manner, if we recollect the form which it takes in lock-

* Experience has often confirmed the truth of all the propositions contained in this paragraph.

ing, and that its base or greatest breadth is then above the two points of contact which fix it and hinder it from descending; and moreover, that we push it back from a narrower space into a wider. *See par. 1700.*

1819. When we have unwedged the head, by shaking it thus, and pushing it up, we are to turn the *occiput* or the forehead from over the *symphysis* of the *pubes*, according as it is the one or the other which is found there, and we direct it preferably towards the left side. We bring down the head in this new position to the bottom of the *pelvis*, and as soon as it is arrived there, we are to turn the part which was over the *symphysis* at the beginning, under the arch of the *pubes*: and afterwards finish the delivery as usual. In these different periods of the operation, we are to observe all that is prescribed in the paragraphs 1792 and following, to 1799 inclusively.

SECTION II.

Method of using the Forceps when the Head is wedged transversely in the superior Strait.

1820. THIS species of locking cannot take place but when the small diameter of the superior *strait* is less than three inches and an half, or when the head is much more voluminous than usual; because its thickness does not commonly exceed that, and it does not stop and become locked, till after it has suffered some reduction in that direction in which it undergoes the greatest friction. When the head is fixed thus, we ought to endeavour to push it up with the hand, as *Smellie* advised; and afterwards conduct the branches of the forceps in the same order, and according to the same directions which I have prescribed in the third section of the preceding article. If we cannot accomplish the putting it back in this manner, we must apply the forceps at the sides of the *pelvis*, placing one branch on the face and the other on the *occiput*, taking care to slide them both up to the same height; for

otherwise they could not be joined*. But it seems to me out of all probability that a case should ever happen in which we could not push back a head wedged only in the superior *strait*, since the part where it preserves the greatest thickness is then always above that *strait*. See par. 1818 and 1700. We must not confound this case with that which is the subject of the following paragraph.

1821. If we admit it to be impossible to push back a head strongly wedged with its sides against the *pubes* and *sacrum*; that would be the only case, in which the method which I have combated in par. 1804, would merit the preference over that described in par. 1806, and following.; and then it would be the only one applicable. Though in that case it is not exempt from inconveniences, it has not all

* *M. de Leurie*, in his method of carrying the forceps above the superior *strait*, recommends *leaving the branch which must be placed on the occiput of a greater length, &c.* Voyez § 796. He ought to have told how the two branches of the instrument are to be joined and fixed in that case. The forceps with a moveable pivot would be of great use to him, if he practises what he advises: it was with that view that *M. Levret* formerly proposed them; and that *M. Coutouly* has just made some alterations in them, which I cannot approve because I cannot discern their utility.

which

which I have attributed to it in the transverse positions of the head above the *pelvis*; Nature having, before the application of the forceps, effected almost all the reduction of its thickness, necessary for its passage through the superior *strait*; since it is already wedged in it, which could not be without its advancing at least a third, or even the half of its length.

1822. When we are reduced to the necessity of following this method, we are to change the situation of the blades of the instrument as soon as the head has cleared the superior *strait*, and place them on the ears, in such a manner that their concave edge may be towards that side of the *pelvis* which answers to the *occiput*; in order to bring it under the arch of the *pubes*, and finish the delivery as usual.

A R T I C L E V.

Method of using the Forceps and the Lever, when the Child presents the Face.

1823. I HAVE already demonstrated what a number of obstacles Nature has to encounter

in delivering herself without help of a child presenting the face, and how much difficulty we find in assisting her, when we are not called early enough to operate at the moment of the evacuation of the waters of the *amnion*. In establishing the essential indication presented by this kind of labour, in which the child's head is constantly turned backward, I have also observed that we could not always fulfil it, that is to say, correct this bad situation with the hand alone, and that it is sometimes necessary to use the lever for that purpose. In many of these cases, the forceps cannot be applied with advantage but after the lever; and though we are sometimes obliged to use them first, it does not always dispense us from recurring to the lever in the sequel, as we shall see in the following sections: but in all those cases, a branch of the forceps may be substituted for the lever, and procure the same advantage.

SECTION I.

Method of using the Forceps and the Lever in that Position of the Face, in which the Forehead answers to the Pubes, and the Chin to the Sacrum; as well as in that in which the Forehead is against the latter, and the Chin towards the former.

1824. WE very seldom meet with the position of the face in which the forehead answers to the *pubes* and the chin to the *sacrum*; and when it happens, we still seldomer see the head descend, and advance as far as the bottom of the *pelvis*, at least unless the latter be extremely large: the head generally stops in the superior *strait*.

1825. When we find the head entirely engaged at the time we are obliged to operate, we endeavour to correct its bad position with the hand alone, as prescribed in par. 1339. If we cannot accomplish it, we insinuate the lever behind the *symphysis* of the *pubes*, carrying it along the crown of the head till it is above the posterior *fontanelle*, in order, as it were, to hook

the *occiput* with the end of the instrument*. The accoucheur then pulling the lever almost directly downwards, must endeavour to make the back of the head descend, while with the extremities of the fingers of the other hand properly applied on the sides of the face †, he tries to push up the chin towards the base of the *sacrum*. Notwithstanding the objections which may be made to this procedure, the difficulties and uncertainty of which I know as well as any one, I nevertheless propose it, because it is more conformable to the principles of the art than those we find described in authors, and because, if it should not succeed, the attempt would be attended with fewer inconveniences.

1826. When the head remains very high, and fixed between the *pubes* and *sacrum*, if we cannot rectify it with the hand, in order to commit its expulsion to the efforts of Nature; nor remove it to search for the feet, either because that removal is impossible, or because there would be too much danger in turning the child; we must introduce the blades of the

* It is on that account that I prefer a lever a little more curved and broader than the common one.

† See the twelfth plate and its explanation.

forceps on the sides, as if it presented the *vertex* in the first position, that is to say, with the *occiput* behind the *pubes*. We are then to give it a transverse position, and pull it down into the cavity of the *pelvis*; where being more at liberty, we may more easily accomplish the pushing up the face, and bringing down the *occiput*. For that purpose, while we make the head advance by pulling the forceps with one hand, taking care not to grasp it very tight, with the ends of the fingers of the other hand properly disposed on the sides of the upper jaw, we must support the lower part of the face, to hinder it from advancing so much as the *occiput*, and make the head turn in some measure, even in its progression, between the blades of the instrument.

1827. When we do not succeed at first, in bending the head forward on the breast, as much as is necessary to enable it to clear the inferior *strait* easily, we must again push up the face as soon as it is entirely in the lower part of the *pelvis*; taking care then to grasp it less tight between the blades of the forceps, that it may move more freely between them. If we cannot in that manner accomplish the proposed design, we must withdraw one of the branches
of

of the forceps, and use the other as a lever to bring down the *occiput*: but in doing that, we must have a regard to the side of the *pelvis* to which we have turned the child's forehead; for both blades cannot be used indiscriminately in all cases. When we have turned the forehead towards the left side of the *pelvis*, we withdraw the female branch, and direct the other on the *vertex* and top of the *occiput*, to bring down the latter; as directed for the transverse position mentioned in par. 1834 and following, and as may be seen in the twelfth plate. If we have turned the forehead to the right side of the *pelvis*, we must withdraw the male branch of the forceps, and use the female branch as a lever, according to the principles already stated.

1828. After having sufficiently brought down the back of the head, and reduced it to one of its natural positions, if we think proper to extract it, we replace the branches of the forceps on the ears; consequently, one before the *sacrum*, and the other behind the *pubes*; but so that their concave edge may be towards the *occiput*. We turn that under the anterior arch of the *pelvis*, to finish the delivery as in those cases where the *vertex* presents in one of
the

the transverse positions which have been already described. If we suppose the woman able to deliver herself and without inconvenience, instead of replacing the branches of the forceps in the manner indicated, we withdraw that with which we had lowered the *occiput*, and wait for the expulsion of the head, which soon takes place when things are well disposed for it.

1829. It is not only to change the position of the face with respect to the superior *strait* and bring down the head to the bottom of the *pelvis*, where we may, in some cases, rectify it with less inconvenience, that I have recommended the forceps, but also to extract it in that very position in which it has advanced; either when we absolutely cannot rectify it, that is to say, raise up the face and lower the *occiput*, or when we cannot do it without great danger to the mother: as when the head is strongly wedged, or the *uterus* strictly contracted and closed on the child. We then prefer the forceps to bring the head along in the attitude we find it in, because fewer inconveniences result from it to the child, than would in any other method, to both child and mother. We place them on the sides of the head; and disengage

disengage it in the position stated in par. 1824, and in that which will be stated in par. 1830, whenever we find them in those positions. But if the face be situated transversely with respect to the inferior *strait*, we first reduce it to the latter; as directed by *Smellie*. My brother obtained all possible success from this method, in a case of this last species, though the head had been far advanced for more than forty-eight hours: the midwife not having discovered that the face presented.

1830. The position of the face in which the forehead rests against the *sacrum* and the chin against the *pubes*, is still more rare than the preceding; and it is equally difficult for the head then to advance to the bottom of the *pelvis*, even when it is well formed. If however it is so far advanced at the time we are called to the assistance of the woman, we must endeavour to push up the face behind the *symphysis* of the *pubes*, till the posterior *fontanelle* answers to the point of the *sacrum*: and when the hand alone cannot make it execute that movement, we must use the lever. But though its application appears easier and more certain in this than in the former case, we must not however flatter ourselves that we shall always be able to obtain

obtain the desired success from it, so many obstacles we sometimes meet with. To apply that instrument advantageously in this case, we must slide it along the *sacrum* and the crown of the head above the posterior *fontanelle*, which is easier to execute than in the preceding position; and endeavour to bring down the *occiput*, while we push up the face with the extremities of the fingers in the prescribed direction. When the face presents in this position at the inferior *strait*, it may happen, if the head be very small relatively to the *pelvis*, that the chin may appear at the top of the *vulva* and engage under the arch of the *pubes*. In that case, we must not endeavour to push up the face behind the *symphysis*, as in the preceding circumstance, but only to bring down the *occiput* with the lever till it has cleared the bottom of the *vulva*. What I have said in par. 1873, may be consulted, as well for the manner of applying the lever, as of performing the extraction of the head.

1831. The difficulty of carrying the lever far enough for its extremity to embrace the top of the *occiput*, when the head is only engaged in the superior *strait*, in this position; and the impossibility of doing it when it is strongly wedged

wedged between the *pubes* and *sacrum*, sometimes oblige us to employ the forceps first, to remove it, and bring it into the cavity of the *pelvis*, where we find less difficulty in rectifying it.

1832. In this case we are to place the instrument at the sides, as in the preceding position, and turn away the chin from the *symphysis* of the *pubes*, carrying it towards the left side of the *pelvis*, till the face be placed across. The head is to be brought down in that state, proceeding as for the second position of the *vertex* above the superior *strait*. See par. 1798. When it is brought into the cavity of the *pelvis*, we may try to rectify it in the *sinus* of the forceps, holding it loosely for that purpose. But if we cannot do it so, we must withdraw the male branch of the instrument, and place the other on the *vertex* which answers to the right side of the *pelvis*, to endeavour to bring down the *occiput*; while we push up the face and assist the action of the lever by means of the fingers of the right hand properly disposed on the sides of the nose under the cheeks, as I have recommended to be done in the transverse positions of the face. See par. 1834 and following, and the twelfth plate.

1833. After

1833. After having sufficiently lowered the *occiput*, and rectified the head, if circumstances require us to extract it, we must replace the blades on its sides, so that the male branch may be under the *pubes* and the other before the *sacrum*; to bring the forehead upward or towards the arch of the *pubes*, and finish the delivery in the manner recommended for the second position of the *vertex* or crown of the head. See par. 1768.

S E C T I O N II.

Method of using the Forceps and Lever in the transverse Position of the Face, in which the Forehead answers to the left Side of the Pelvis, and the Chin to the right Side; and in that in which the Forehead is towards the right Side, and the Chin to the left.

1834. WHEN the face presents across, as it may advance much farther than in the preceding positions, we commonly find it in the lower part of the *pelvis* when we are called in second, to deliver the woman, and sometimes

we can no longer rectify it with the hand alone, nor remove it to search for the feet. *Smellie* recommended in that case to apply one branch of the forceps under the *pubes*, and the other before the *sacrum*, to bring the head entirely down, and afterwards turn the chin under the anterior arch of the *pelvis*, in order to extract it in that position. But the forceps cannot be very salutary in this case, at least, till the head has been rectified, that is, till we have pushed up the chin on the top of the child's breast, and brought down the *occiput*. That is what *M. Levret* intended when he advised to carry one of the branches of the forceps on the occipital region of the child, and to use it like a lever*. The views of that celebrated accoucheur would have been excellent, if he had not recommended to bring the face afterwards under the *pubes*; that is the only defect in his method. It is much better to turn the face downward, than to bring it upward, when we have it equally in our power to turn it one way or the other.

1835. Though we may use one of the branches of the forceps instead of the common

* This method is what *M. Levret* dictated in his private lectures.

lever, to rectify the position of the head, it is not indifferent which we make choice of; the male branch is the only one proper to be used in that transverse position of the face in which the *vertex* answers to the left side of the *pelvis* and the chin to the right, as the female branch is to be employed exclusively in the position which I shall describe next.

1836. We introduce the former at the left side of the *pelvis*, and along the crown of the head, till its extremity reaches beyond the posterior *fontanelle*, and its curve exactly embraces the convexity of the *occiput*. We then take hold of the instrument with both hands; *viz.* the right placed at its extremity, and the other close to the parts of the woman. We then pull towards us, in a line parallel with the woman's left thigh, which I suppose extended, till the *occiput* be brought sufficiently down; observing to replace the instrument properly as often as it slips from over the head; for we very seldom succeed at the first trial. To favour this movement of the head, we are sometimes obliged to push up the face with the ends of some of the fingers of the left hand, while with the other we pull down the occipital region by means of the lever: which can-

not be done unless we place the thumb of the first hand so as to serve for a *fulcrum* to the instrument, as may be seen in the twelfth plate.

1837. After having sufficiently brought down the *occiput*, and pushed the chin up to the breast, we may commit the delivery to Nature; or if circumstances require us to deliver the woman without delay, we may apply the two branches of the forceps on the sides of the head: proceeding conformably to the principles established for that position of the *vertex*, in which the *occiput* answers to the left side of the *pelvis*. See par. 1783.

1838. The transverse position of the face in which the forehead answers to the right side of the *pelvis*, and the chin to the left, presents the same indications as the preceding, being perfectly similar to it, with respect to the relation of the dimensions of the head to those of the *pelvis*. If we cannot with the hand alone rectify the head which is turned on the child's back, we must make use of the lever, or the female branch of the forceps. We must pass the instrument up on the right side of the *pelvis*, beyond the *occiput*, which we are to bring down as in the position described last;
either

either favouring its descent by pushing up the face with the fingers applied on the sides of the nose, or without, as occasion may require.

1839. When we have properly rectified the position of the head, we are to use the forceps to extract it, if circumstances do not permit us to leave the expulsion of the child to the efforts of the woman. But then the male branch of the instrument must be placed under the *pubes*, and the female branch before the *sacrum*; to enable us to bring the *occiput* under the anterior arch of the *pelvis*, as in that transverse position of the head in which the *occiput* answers to the right side. See par. 1784.

1840. There are circumstances, though indeed extremely rare, in which we are obliged to deviate from the rules I have just laid down with respect to the transverse positions of the face, and in which we cannot rectify the head and reduce it to its natural situation, nor turn the child and extract it by the feet: because, on one side, the head is too far advanced and wedged in the *pelvis*; and on the other, the *uterus* is too much contracted, too tight, and painful, and the child's life also too uncertain. In these extraordinary cases, in which the esta-

blished principles are not applicable, and in which the woman alone seems to merit all our attention, we must extract the head with the forceps, as *Smellie* did, and in the manner already described in par. 1829.

A R T I C L E VI.

Remarks on the Use of the Forceps and Lever in Labours where the Child presents the occipital Region; and where it presents one of the Sides of the Head, at the superior Strait.

1841. THE celebrated *M. Levret* does not confine the utility of his curved forceps to those cases only of which we have already treated; he prescribes them also for those where the head is advanced and locked presenting the occipital region, or one of the parietals: but we find no other observation in his works which tends to establish these different species of locking, nor any precept relative to his mode of operating, unless it be
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when he speaks of his *tire-tête* with three branches*.

1842. If we recollect what I have said in another place of the cause of those labours where the occipital region presents, and the indications which they offer, we shall see in what point of view they ought to be considered here. The head never presents this region but at the superior *strait*, and at the beginning of labour; it cannot descend but that region must recede, and the posterior part of the crown approach the center of the *pelvis*, so that, if it should be wedged, it is not so much the *occiput* which it presents at that time, as the crown or *vertex*.

1843. These labours in which the occipital region is found placed at the entrance of the *pelvis*, at the beginning of labour, are always much less troublesome than those in which the child presents the face there; since the head cannot advance without returning to its natural position, and bending more and more on the breast; whereas in the latter it recedes more from that good position as it advances farther, till it is entirely turned on the back.

* Voyez la première partie de ses Observations sur la Cause des Accouchemens Laborieux.

1844. When we are obliged to deliver at the time the occipital region presents, if it be thought better to do it with the forceps than to turn the child and bring it by the feet, we must previously, with one hand introduced into the *vagina*, remove the crown of the head from the point of the margin against which it rests, and bring it to the center of the superior *strait*, that we may afterwards place the blades of the instrument on the child's ears, as I have recommended for the different positions of the *vertex*. One example will suffice to demonstrate the mode of operating in all these cases.

1845. Let us suppose that the occipital region presents at the superior *strait*, so that the back of the neck rests on the edge of the *os pubis*, and the crown of the head against the projection of the *sacrum*. In this case we are to introduce the head along the posterior part of the *pelvis*, till the fingers reach far enough on the crown of the head to grasp it, and bring it to the center of the superior *strait*; while with the other hand we exert more or less pressure on the belly of the woman, with a view of diminishing the anterior obliquity of the *uterus*. We may afterwards apply the forceps at the sides of the *pelvis*, and of a proper height on those
of

of the head, as in the first position of the *vertex*, when it is locked. We then turn the *occiput* from over the *symphysis* of the *pubes*, directing it towards the left lateral part of the superior *strait*, in order to render the greatest diameter of the head parallel to the greatest diameter of the *strait*, and bring it down in that direction to the bottom of the *pelvis*; where we make it execute another rotation, to turn the occipital region under the arch of the *pubes*, and finish the delivery as usual.

1846. If the *occiput* should present in a different situation from that which I have selected for an example, we must still use the hand to bring the crown of the head to the entrance of the *pelvis*; conducting ourselves according to what I have said concerning these sorts of labour, in par. 1408, and following. As to the application of the forceps, what I have prescribed for that position of the *vertex*, to which the child's head shall then be reduced, may be consulted.

1847. The head cannot present one of its sides, without being inclined more or less on the opposite shoulder; as it cannot present the face without being turned on the back. They are likewise pretty nearly the same causes,
which

which determine these two regions to present themselves at the entrance of the *pelvis*: but the consequences of these bad positions are very different. In the former, the head cannot advance without rectifying itself, and returning, as I may say, spontaneously to its natural situation: whereas it recedes farther and farther from it as it advances, when it presents the face; as I have observed in par. 1843. Locking is no more to be feared in the presentations of the lateral parts of the head, than in those of the *occiput*; since it cannot take place unless the head advance, and it cannot advance without restoring itself to its natural situation. If it should be locked, it would then be the *vertex* which would present, and the case would be resolved into one of those of which I have already treated. It is then much less the fear of locking which ought to determine us to recur to instruments, when one of the sides of the head presents, than the danger there might be, according to circumstances, in turning the child to bring it by the feet.

1848. If those circumstances should sometimes determine us in favour of the forceps, we must begin by rectifying the head, with the hand introduced into the *vagina*, before we
 apply

apply them; in order to do it afterwards as in the different positions of the *vertex*. One example may also suffice for the perfect understanding of what we ought to do in all cases where one of the sides of the head presents.

1849. Suppose that it is the right side of the head which is found at the entrance of the *pelvis*, so placed that the crown rests against the projection of the *sacrum*, and the lower part of the ear on the edge of the *os pubis*: a position which is not very rare, as I have already observed. If we should then judge it more expedient to deliver with the forceps than to turn the child and bring it by the feet, we must introduce the left hand into the *vagina*, and insinuate the fingers above the *vertex*, to bring that region to the superior *strait*; in the same manner as we should do, if we only proposed to reduce the head to its natural position, with a view of afterwards committing the delivery to Nature (see par. 1479). After having performed this change, the crown of the head being placed transversely at the superior *strait*, so that the *occiput* is towards the left side, we are to introduce the female branch of the forceps under the *symphysis* of the *pubes*, and the male branch before the *sacrum*, to take
2 hold

hold of and extract the head, according to the rules prescribed in par. 1783.

1850. The success of the application of the lever for the purpose of rectifying the head, or bringing the *vertex* to the entrance of the *pelvis*, is too uncertain in all these cases to authorize us to recommend it: the hand is preferable.

A R T I C L E VII.

Of the Use of the Forceps, for extracting the Head, in preternatural Labours, after the Child's Trunk is delivered.

1851. EVERY one knows the danger to which the child is exposed in those labours where we are obliged to extract it by the feet, especially when the *pelvis* is rather narrow with respect to the volume of the head. Its death is then almost always inevitable, whether we exert violent efforts on the *trunk* with a design to extract the head, or leave the delivery to Nature, after having disengaged the feet, as some have too generally recommended. In the first case, the child is a victim to the forced extensions

sions of the spinal column, the stretching of the marrow which it contains, and the luxation of some of the *cervical vertebrae*, or of the head itself: in the other, its death is, on the contrary, the effect of the pressure which the umbilical cord as well as the breast suffers in passing the canal of the *pelvis*, where those parts remain a shorter or longer time; and perhaps also in the sequel, of the compression of the jugular vessels; the edge of the orifice of the *uterus* and the entrance of the *vulva* closing on the neck, and acting like a ligature.

1852. Art holds out but a feeble hand to the child in this unfortunate circumstance, and the most certain of its resources does not always secure the child from the pressing danger which threatens it. *Smellie* applied the forceps several times with success in these cases, and I have trod in his steps; but few accoucheurs have done the same: at least we find no vestige of this method in their works, except in that of *M. de Leurie*. He apparently was not acquainted with *Smellie*, especially with his thirty-fifth table and its explanation, where we meet with views that could be suggested only by a truly skilful practitioner; since he assures us, that it was by the force of study and reflection that he

he has obtained some success from the forceps in these sorts of cases; *Smellie* confining himself, says he, to directing their use, without describing the mode of applying them*. I, on the contrary, find *Smellie* so clear and precise on this latter point, that I should refer to his work, if the method he proposes were equally applicable to all cases in which the head may be retained after the exit of the *trunk*; but being applicable to those positions only, in which the length of the base of the *cranium* is placed according to the *antero-posterior* diameter of the *pelvis*, it cannot merit the preference over that which I shall describe for the transverse positions, much more frequent than the former, if we consider the head retained in the superior *strait*.

1853. The intention of preserving the life of the child, is not the only motive which ought to determine us to use the forceps in these circumstances; we ought to use them after its death to avoid separating the *trunk* and tearing it away from the head; we ought to determine to use them more readily, the

* *Traité d'Accouchemens*, par *M. de Leuric*, nov. édit. § 798 & 800.

more reason we have to fear that accident: not because it is to be dreaded on account of the child, since it is already dead, but because it is more easy to extract the head while it is connected with the *trunk*, than when it is separated from it.

1854. It is not always at the superior *strait* that the head is stopped in preternatural labours, when we extract the child by the feet; sometimes it is only stopped at the inferior *strait*, which is a much more favourable circumstance for the application of the forceps. If the part of the *pelvis* where the head is stopped causes some slight differences in the manner of using that instrument, its position relatively to that part requires much more essential ones, as we shall see hereafter.

SECTION I.

Method of applying the Forceps, when the Head is retained by its Base in that Position in which the Occiput answers to the Pubes, and the Face to the Sacrum; and in that where the Occiput is against the latter, and the Face towards the Pubes.

1855. IN the first case, after having disengaged the child's arms, and wrapped them up in the same napkin which is round the *trunk*, we raise the whole properly towards the woman's belly, in which situation it must be supported by an assistant. Then we insinuate the branches of the instrument at the sides of the *pelvis**, with the same cautions, and in the same manner, as in the first position of the crown of the head; attending only to the height of the base of the *cranium*, that their blades may be advanced more or less, and their external extremities properly lowered. When the two branches are united and fixed, we draw down the head, making it describe a different course, according to the part of the *pel-*

* See the thirteenth plate.

vis, which it occupies, and the *straits* which it has to clear.

1856. When it is only stopped at the inferior *strait*, we pull with the right hand at the extremity of the forceps, raising it insensibly as the face advances towards the lower part of the *vulva*, and continue to do so till the forehead is without; while we support the *perineum* with the other hand, to prevent its rupture.

1857. When the head is still above the *pelvis*, we carry the blades of the forceps farther than in the preceding case, and keep their extremities much lower. We afterwards take hold of the extremity with the right hand, and the middle of the instrument with the left; we remove the head, and give it a transverse situation with respect to the superior *strait*; but turning the *occiput* preferably towards the left side of the *pelvis*, as may be seen in the fourteenth plate. If the head should be engaged and wedged in the superior *strait*, before we turn it transversely we should shake it a little and push it up a few lines, carrying the extremity of the forceps alternately towards each of the woman's thighs, as directed in par.

1818. In turning the head afterwards to give

it the transverse position indicated, we must lower the end of the instrument more and more, and carry it a little towards the woman's left thigh. It is also in that direction that we must pull to bring the head into the cavity of the *pelvis*; but as soon as it is there, we are to turn the head again, to bring the *occiput* behind the *symphysis* of the *pubes*, and continue to extract it, as directed in the preceding paragraph; that is to say, by insensibly raising the extremity of the forceps, and pulling them towards us.

1858. The person who supports the body of the child, must make it follow the same movements which are given to the head. While the accoucheur turns the *occiput* towards the left side of the *pelvis*, the child's back must be inclined towards the woman's left groin, and be turned upward again as it was before, when we bring the occipital region behind the *symphysis* of the *pubes*. The same precautions are to be observed in the positions I am going to describe.

1859. When the head stopped by its base, presents the *occiput* to the *sacrum* and the face to the *pubes*, instead of raising the child's *trunk* towards the belly of the mother, as directed in

par:

par. 1855, we must carry it a little backward, where it is to be supported in that position by an assistant, and wrapped up in a linen cloth, in which the arms are to be included also. The blades of the forceps are to be introduced as in the preceding position; but above the body of the child, conducting them with the ends of some of the fingers, till they are beyond the sides of the lower jaw. The extremity of the instrument is to be kept a little higher than in the first case, if the head occupies the lower part of the *pelvis*; and as low as possible, without hurting the child, when it is stopped at the superior *strait* *. After having placed the instrument properly, we proceed to

* When the child's head is still so high, if we find too much difficulty in introducing the branches of the forceps above the body of the child, on account of the impossibility of lowering the extremity of the instrument so much as we do in the preceding position, we must, as in that, raise the *trunk* of the child towards the belly of the mother, and try to carry the instrument underneath. But some inconveniences would result from it afterwards in making the head take the course prescribed in par. 1861; inconveniences which can only be avoided by withdrawing the instrument, when the head shall be descended into the cavity of the *pelvis*, and by replacing it as in the transverse position which I shall describe next.

the extraction of the head in the following manner.

1860. When it is still in the superior *strait*, we shake it a little, to enable us, first to push it up, and afterwards to turn the face from behind the *pubes*, more easily; which is not difficult to do, if we take care, while we turn it, to lower the extremity of the instrument, and incline it towards the thigh of that side to which we direct the face; but I would recommend the left preferably. Having placed the greatest diameter of the base of the *cranium* according to the greatest diameter of the superior *strait*, we are to pull the instrument in a direction which would tend to pass under the woman's left thigh, to bring the head into the cavity of the *pelvis*; where we make it execute another rotation, by which we bring the face under the *pubes*. As we lower the extremity of the instrument, and incline it towards one of the woman's thighs, at the same time that we change the position of the head with respect to the superior *strait*, so we must raise it up and bring it opposite the *pubes*, in the latter period, when we bring the face back again under that bone.

1861. To finish the extraction of the head,

as soon as we have reduced it to the position in question with respect to the inferior *strait*, we hold the forceps with the right hand only, placed at the extremity, and apply the left against the *perinæum* of the woman and under the child's neck, which we support with the radial edge of the *index*, so as to make that the center of motion for the head as it disengages, and not the commissure of the *vulva* or the *fourchette*. We pull towards us with the right hand, raising the handles of the instrument gradually and carrying them alternately towards each of the woman's thighs, till the whole of the face and the *vertex* are disengaged successively from under the *pubes*: for so the head must be delivered in this position, that it may present its smallest diameters to those of the *pelvis*; as I have observed in treating of the mechanism of that natural labour, in which the feet present with the toes upward.

1862. If the head be retained only by the inferior *strait*, at the time when we think it necessary to recur to the forceps, it will be so much the more advantageous, as well with respect to the introduction of the blades of the instrument, as for the extraction of the head itself; and we must conduct ourselves on both

points as directed in par. 1859 and 1861. We must not attempt to turn the face towards the *sacrum* in the case which is the subject of those same paragraphs, but with the greatest care and caution.

SECTION II.

Method of using the Forceps, when the Head is retained in a transverse Position, after the Exit of the Trunk.

1863. It is generally in this direction that the base of the *cranium* stops at the superior *strait*, when the child comes by the feet, and this accident is to be feared whenever the distance from the *pubes* to the *sacro-vertebral* angle is less than three inches and an half. The position of the head, though transverse, is however not always exactly the same; for the *occiput* sometimes answers to the left side of the *pelvis*, and at other times to the right: this remark is not unimportant with respect to the application of the curved forceps; for their branches ought not to be placed in the same manner

manner in both cases. It is not enough that they be directed on the sides of the head and to a proper height; they must also be so disposed, that their concave edge may be towards the *occiput*, that we may bring it under the *pubes* in the last period. I might repeat in this place what I have said of the inconveniences of applying one blade of the forceps on the face, and the other on the *occiput*; as would happen in all these cases, if we were to follow the common method of *Smellie* and *M. de Leurie*: but the reader may consult the article in which I have treated of the transverse positions of the crown of the head with respect to the superior *strait*.

1864. I will not however conceal, that that method, though little conformable to the principles of the art, is more easy to execute than that which I substitute for it, as far as regards the application of the forceps: but that trifling advantage cannot determine us to prefer it, because it is much less safe for the child. As it is proper to place the blades of the forceps on the sides of the head, and as we can never do that more easily than when they can at the same time be introduced towards the sides of the *pelvis*, the accoucheur would spare himself

some difficulties, if he could with the hand alone, after having brought down the child's arms, change the position of the head, and reduce it to the first of those which I have described; that is to say, if he could turn the face towards the *sacrum*: but generally, and indeed almost always, he would attempt that removal in vain. We therefore proceed in the following manner.

1865. When the *occiput* answers to the left side of the *pelvis*, we begin by inclining the *trunk* and arms of the child, wrapped up in the same cloth, towards the thigh of that side, where an assistant must support them while we apply the forceps. We first introduce the female branch towards the right side of the *pelvis*, directing the extremity of the blade with the fingers of the left hand, till it passes beyond the child's chin; but a little on the right cheek, that it may not stop under the jaw, nor go into the mouth, or against the nose, in its passage. We continue to slide it up in the same direction, nearly to the height of the child's forehead; afterwards by pushing it with the ends of the fingers which have served to guide it, placed on the posterior or convex edge, it is to be passed over the face and the left temple, to conduct it under the
pubes;

pubes; while with the other hand we lower its external extremity, but by insensible degrees, and turn the end of the hook which terminates the handle, directly towards the floor: as I have remarked on account of one of the transverse positions of the crown of the head. See par. 1808.

1866. We then insinuate the other branch directly before the projection of the *sacrum*, and to the same height as the first, as may be seen in the fourteenth plate, and in par. 1809. After that, we unite and fix them, in order to extract the head in the following manner. We first pull downwards as much as possible, till the head has cleared the superior *strait*, observing, as it descends, to incline the extremity of the forceps a little towards the woman's left thigh. But as soon as it is in the cavity of the *pelvis*, we bring the *occiput* under the *pubes*, by raising the end of the instrument, and bringing it opposite to the *symphysis*, to extract the head as in the first position.

1867. We place the forceps in the same manner, in that transverse situation of the base of the *cranium*, in which the hind part of the head answers to the right side of the *pelvis*; but with this difference, that the male branch must
be

be under the *symphysis* of the *pubes*, and the female branch before the *sacrum*. We begin by insinuating the male branch at the left side of the *pelvis* where the face is ; and, after having carried it to a proper height that its extremity may embrace the forehead, we slide it under the *symphysis* of the *pubes*, by pushing it with the ends of the fingers of the right hand, which at first served to guide it, and which we then apply to its convex edge ; while we lower the extremity of the instrument insensibly, but as much as we can, turning the point of the hook downward. We afterwards introduce the other branch along the *sacrum* ; and when they are united, we grasp the instrument with both hands, the left placed at its extremity, and the right in the middle. We first pull downward, carrying the left hand a little towards the woman's right thigh, to which side the child's body ought to be inclined at the beginning. When the head has traversed the superior *strait*, we turn it in the cavity of the *pelvis*, to bring the *occiput* under the *pubes*, and finish its extraction as usual.

C H A P. IV.

Of the Use of the Lever.

1868. FROM what I have said, the use of the lever will not appear so general as that of the forceps, and every practitioner may easily convince himself of it, if he will pay the slightest attention to the mode of acting of those two instruments. The lever ought only to be employed for correcting certain bad positions of the head, and secondarily favouring its exit; but the forceps can extract it whenever the disproportion between the head and the mother's *pelvis* is not too considerable.

1869. The head, as it engages in the *pelvis*, sometimes deviates from the course which it ought to follow to enable it to disengage again from it freely. The posterior part of the *vertex*, or the region of the posterior *fontanelle*, instead of advancing more and more, may recede in proportion as the head descends; so that the upper part of the forehead comes to the center of the inferior *strait*, as is explained in par. 1277, and following. The *occiput* being more

or less turned on the child's back, and the chin removed from the breast, so that the head presents its greatest diameter foremost, delivery becomes impossible in many women, without assistance, or at least so difficult, that we cannot be too much on our guard against this bad position, whether to prevent it, or to correct it when we are called later. See par. 1283, and following.

1870. The indication, in the first case, consists in supporting the top of the forehead to hinder it from descending; and in the second, in bending the head on the child's breast, either by pushing up the forehead in a proper direction, or by pulling the occiput downward. The hand is almost always sufficient to procure this advantageous change; and it is only when that fails that we ought to have recourse to the lever. I must state here that the cases in which the latter becomes necessary, are so rare, that I and my brother have never met with one where it was indispensable*.

1871. It

* I shall however state several, independently of those which I have already demonstrated in treating of the use of the forceps; because, in a work intended for the instruction of young practitioners, nothing ought to be omitted. All these cases will appear to those who will pay the smallest attention

1871. It is always on the *occiput*, that we ought to apply this instrument, the curve of which should be proportioned to the convexity of that region; that it may embrace it exactly, and that its extremity may find a rest sufficient to bring it down. We ought to use it as a kind of blunt hook, and not as a common lever. The manner of using it, though always according to the same principles, must nevertheless be a little different in each position of the head; because we must have a regard to the natural course which it ought to describe in the various situations in which it may present, in order to clear the *pelvis* with the fewest obstacles.

attention to them, only as different shades of the same case; for in all of them, the use of the lever is limited to bringing down the occipital extremity of the head.

SECTION I.

Method of using the Lever in that Position of the Vertex in which the Occiput answers to the Pubes of the Mother, and the Face to the Sacrum; and in that where the Occiput is against the latter, and the Face behind the Pubes.

1872. THE first of these cases, which is nearly that for which *Roonhuijsen* recommended the use of the lever, is not very common; because the head seldom descends in that position in which the *occiput* answers to the *symphysis* of the *pubes*. If we almost always find it situated thus, when it disengages itself from the *pelvis*, it is because the *occiput* turns under the *pubes*, as soon as it has cleared the superior *strait*: but it cannot execute this rotatory motion, when it has taken a course in its descent, which renders the use of the lever necessary. Supposing that it has at first presented the *occiput* behind the *pubes*, and that, as the head engaged, it has turned on the back, if we cannot push up the forehead, or bring down the occipital region with the fingers alone, we must insinuate the
lever

lever behind the *symphysis* of the *pubes* till its curve exactly embraces the convexity of the *occiput*. That we may introduce it more certainly and methodically, we must hold it with one hand, so that the extremity which serves it for a handle be very low, and we must direct the other end to the place indicated, by means of the fore and middle fingers of the other hand, or one of them only, introduced at the entrance of the *vagina*. To make the instrument penetrate more easily, we must take care to raise a little, but very gradually, the extremity which is without, carrying it a little alternately towards each of the woman's thighs, till the length of that portion which is in sight be nearly parallel to the horizon.

1873. Having slid it up to a convenient height on the head, we take hold of it with one hand, placed over it, near the *pubes*, and the other at its extremity. With the latter, we pull towards us, and a little downwards, while with the former we act as if we wished to depress the head towards the *coccyx* of the mother, and carry it backwards: by this means we shall give it a kind of vertical turn, in which the *occiput* will descend, while the chin will rise towards the breast. If we do not
succeed

succeed by this method in bringing down the *occiput* as much as the circumstance requires, we must, at the same time that we act with the lever on the back of the head, push up the forehead a little, by means of the extremities of some of the fingers of the hand which grasps the middle of the instrument; but so disposed that it may keep the lever firm, and act with some of the fingers on the forehead at the same time. When we have made the head execute this vertical turn, it seldom fails to come along, unless other causes obstruct it: but then we have recourse to the forceps, if circumstances do not permit the woman to deliver herself without help.

1874. The utility of the lever is not less evident in the position in which the forehead answers to the *pubes* and the *occiput* to the *sacrum*, than in the preceding, when the child's chin has quitted the upper part of its breast too soon, and the head has advanced turning a little on the back: but we ought not to use it, except when the fingers alone cannot rectify the head, that is to say bring down the *occiput*.

1875. We then slide up the instrument between the *occiput* of the child and the *sacrum*
 of

of the mother, holding it pretty nearly as we hold the staff for sounding in the common method, or over the belly, with this difference however, that its extremity must be less inclined on the belly, than the end of the staff. To make the instrument penetrate far enough, and go above the *occipital protuberance*, we must gradually bring down the extremity, as far as the external parts of the woman permit it, carrying it alternately from side to side as before directed. Being assured that the lever is well placed on the head, we take hold of the middle part of it underneath, with one hand near the *perinæum*, in order to keep it fixed on the *occiput*; and with the other hand we pull at its extremity. We take care to act at first almost in an horizontal direction, and afterwards rising a little, till the nape, or back of the child's neck begins to appear at the lower part of the *vulva*. We then withdraw the lever, and disengage the face from under the *pubes*, as in a natural labour where it presents in that manner.

SECTION II.

Method of using the Lever in all Cases where the Child's Head is placed diagonally or transversely at the inferior strait.

1876. THE diagonal positions, with respect to the inferior *strait*, are the consequence of those which we almost always observe at the superior *strait*, and which are the most favourable for the descent of the head. It is not to change those positions that I propose the lever: the finger is sufficient to make the head take another direction, and bring one of its extremities under the *pubes*, when it does not turn so of itself, which it very rarely fails to do. If the efforts of Nature, and the finger of the accoucheur be insufficient, it would be the forceps we ought to have recourse to, and not the lever. I have already fixed the number of these positions to four, which I shall here briefly recapitulate. In the two first, the *occiput* answers to one of the *foramina ovalia*; these are the most common: in the two others, it is situated opposite one of the *sacro-ischiatic* notches.

1877. When

1877. When the head has advanced in one or other of these positions turning on the child's back, as I have stated in par. 1277 and following, we must endeavour to push up the forehead and bring down the *occiput*, in the manner indicated in the same paragraphs. If the fingers alone are not sufficient to procure this change, we must have recourse to the lever. It was in these sorts of cases particularly, that *M. Levret* thought it recommendable, and in which he said he had successfully used one of the branches of his forceps, before he was acquainted with that new instrument: for these cases are the same as those in which he thought the *ischiatric spine* seldom failed to sink into the *sagittal suture*. See par. 1649, and the following one.

1878. When the *occiput* is placed behind one or other of the *foramina ovalia*, the instrument must be conducted on it nearly as for the position mentioned in par. 1872; except that we direct it a little on one side, instead of insinuating it directly under the *symphysis* of the *pubes*; in order that it may always be applied on the back of the head, which we must bring down properly, and then leave the rest of the delivery to the care of Nature; unless circum-

stances oblige us to operate immediately; which must then be done with the forceps. But the success of the forceps would be extremely uncertain if we were to use them before we have brought down the *occiput*; as any one may convince himself by recollecting the manner in which that instrument acts, and the relation of the dimensions of the head thus turned on the back, to those of the inferior *strait*.

1879. When the *occiput* answers to one of the *ischiatric sinuses*, we must insinuate the lever in that direction; keeping the end which is without, very high at first, and more or less inclined towards the groin of the opposite side. The rest of the operation to be conducted as when the *occiput* answers directly to the *sacrum*, till we have brought it down, and reduced it to a proper position.

1880. The lever may be useful, not only in all the cases stated in this chapter, but also in those in which the face presents, as I have already observed. In all of them, in case of necessity, one of the branches of the forceps may be substituted for it, though perhaps with somewhat less advantage, and its application requires more care and attention.

C H A P. V.

Labours which cannot be terminated without the Application of some cutting Instrument to the Body of the Child.

1881. **T**HE mother and child do not always derive equal advantages from the science of midwifery ; because there are circumstances in which we cannot secure the life of the one, but by more or less exposing that of the other. Although these circumstances are much more rare at present, than in the last age, or even at the commencement of the present, when crotchets and other instruments for opening the *cranium* were frequently employed ; we still however meet with some in which we are obliged to apply these instruments to the child ; as likewise with others that oblige us to perform painful and even dangerous operations on the parts of the mother, to rescue her, as well as her child, from certain death.

1882. Crotchets and *perce-crane*s are not the only cutting instruments which we are obliged to apply to the child in its mother's womb ;

the bistory, the trocar, or the scissars, are sometimes indicated preferably. The child is almost always living when these latter merit the preference ; and if it perishes after their application, it is not so much an effect of the division which they have made, as of the disease which required them. It is not the same with crotchets, and other instruments of that kind ; nothing but the death of the child can authorize the use of them, whatever obstacles may obstruct delivery ; because they almost always kill. Though we have sometimes extracted children alive by their means, we have generally had the mortification to see them expire, a few minutes afterwards, in consequence of their wounds.

1883. The causes which ought to determine us to use these instruments, are generally, a deformity of the *pelvis* of the mother, or of the child, whether of the head or *trunk* ; a dropsy of the *cranium*, breast or *abdomen*, &c. All these causes shall be stated in the sequel, as I treat of the operations they require ; but before all, it seems to me proper to explain the signs which may enable us to judge, whether the child contained in the womb be living or dead ; because it would not be less contrary to the rules

rules of the art and to every principle of humanity, to mutilate a living child in the womb of its mother, with a view of sparing her the pain and danger of the Cefarean operation, than to perform it, to give an exit to a child already deprived of life, which might have been extracted at the usual passage, after being dismembered. I shall neglect nothing which may enable young accoucheurs to steer clear of those disagreeable rocks: if I cannot place them in perfect security, because of the uncertainty which sometimes attends the signs I am going to lay down, I shall, at least, render them exceedingly circumspect in the use, already become too familiar, of this kind of instruments.

A R T I C L E I.

Signs by which we usually judge whether the Child be living or dead.

1884. THE regular increase of the woman's belly, her enjoying a good state of health, the movements which she feels within her after,

the fourth month of pregnancy, or which the accoucheur distinguishes by applying his hand to the part where they are felt, are, before the time of labour, the signs by which we commonly judge that the child is living. But how often have we been deceived on this subject!

1885. These signs in fact will not appear decisive, if we consider that the volume of the woman's belly sometimes increases after the death of the **child**; that many women feel internal movements like those of a child, although they are not pregnant; that others, who are really so, scarcely distinguish any, notwithstanding the child be in perfect health; lastly, that some have been delivered of a child, dead and putrefied, a day, nay even the instant after they thought they felt it move*.

1886. When the child is living, other signs make it known in the course of labour. Many accoucheurs think the pains are brisker and more constant, and that the waters of the *amnion* are clear and limpid, but we cannot establish a judgment on such symptoms; and

* I advance nothing on this subject which is not the result of observation.

the following appear much more certain. The skin of the *cranium* is tight, it enjoys that elasticity proper to the *teguments*, and there forms a tumor or swelling in it more or less considerable, whenever the head advances with difficulty. We distinguish the pulsation of the heart, and of the arteries of the cord, when the fingers can reach them, as well as the motions of the tongue and of the lower jaw, when we introduce it into the mouth: but unfortunately we cannot always carry the finger so far in that disagreeable circumstance, in which the art leaves us no other resources but the Cæsarean operation, or the section of the child *in utero*. We must then refer to the commemorative signs, and to those which may be deduced from the part which the child presents at the orifice of the *uterus*. The least equivocal of all, is the tumefaction which arises on the head, during the efforts of labour, or that which arises on the part that presents, or is pressed against the entrance of the *pelvis*.

1887. I have observed in par. 459, that the anterior *fontanelle* has no pulsation before birth; and I shall remark here, 1. that the pulsation of the arteries of the finger which we use in
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these researches, is often mistaken for that of the arteries of the part of the child subjected to the touch: 2. that the irregularity and slowness of the labour pains are most commonly independent of the life or death of the child; as well as the colour and odour of the waters of the *amnion*. I have frequently found the latter very clear, and without any extraordinary odour, though the child was dead; and at other times turbid, greenish or greyish, and of an insupportable *fætor*, when the child has been living and healthy.

1888. The absence of the apparent signs of life in the child *in utero*, does not always characterize its death in a manner sufficiently evident, to secure us from falling into error on this subject; and nothing can more clearly convince us of this truth, than the difficulty, and even impossibility which we sometimes find, to determine whether a child, which is entirely submitted to our senses, which we can see and touch, be living or dead. I have known some living, who at first had been thought dead, and had even been abandoned as such, after a long continuance of apparently fruitless endeavours to revive them. If it is so difficult then to pronounce on the state of the child,
with

with what prudence ought we to do it, when we can only touch, as I may say, a single point of its surface, as almost always happens when the *pelvis* is so much deformed as to require the Cæsarean operation, or the section of the child in the womb !

1889. The child's death is not always the effect of one and the same cause; sometimes that accident is the consequence of the disorders of the mother, and at other times of those of the child, or of an external cause, as of a blow, a fall, &c. Among the former, I know none more dangerous for the child, than convulsions and a plethora.

1890. The commemorative signs, at most, can only be of use to us in the case where the child perishes some time before the usual epoch of its birth; we can derive no advantage from them when its death happens during the course of labour.

1891. When the child dies during pregnancy, if the mother retains it some time, instead of the movements she had been used to feel, she soon finds a troublesome rolling in the *uterus*, and a sensation of heaviness in the side she lies on. From the third to the fourth day, the belly commonly swells, and becomes painful,

ful, and then grows less; the face soon after becomes pale, the eyes sink in, and the eyelids are surrounded by a blackish, livid or lead coloured circle; she has a bad taste in her mouth, yawns frequently, has pains in the head, ringing in the ears, nausea and vomiting, *syncope*s and spontaneous lassitudes; her belly shrinks, and she is often consumed by a slow continual fever.

1892. These effects seldom fail to manifest themselves when the woman retains the dead body of the child some time; but I have seen them occur in the same order, after a fall which a woman had in the sixth month of pregnancy, though the child was not dead. The woman remained a fortnight in the same state, without distinguishing the least motion that could be attributed to the organs of the child; but she afterwards felt some slight ones, which grew stronger by degrees, and she was not delivered till after two months; the child was alive, but very weak and languishing; it however recovered, and became as strong as usual.

1893. Another woman almost at full time, in her second pregnancy, being awaked by a frightful dream, and thinking she still saw the
subject

subject of it, leaped out of bed to defend herself, and call for help. Being come to herself, she only complained of the extraordinary motions of the child, which from the next day gave no other indications of its presence, than the troublesome rolling mentioned in par. 1891. The symptoms stated in the same paragraph afterwards appeared, and the woman, overcome by those accidents, as well as by the alarming prospect of seeing her child born dead, was delivered the tenth day; not as she feared, but of a strong healthy child weighing nine pounds at least.

1894. When the child dies some days before its expulsion, the waters of the *amnion* are most commonly thick and turbid, as if mixed with *meconium*; and have a fetid and cadaverous smell. The bones of the cranium are loose, the skin which covers them is very slack, and it is sometimes formed into a bag under the crown of the head, which is found full of a glairy reddish water.

1895. The concurrence of all these signs leaves no doubt of the child's death; but as they can only be the effect of its putrefaction, they do not always exist at the time of labour; either because it is but lately dead, or because

it may remain in the waters of the *amnion* without putrefying *. We should therefore sometimes endanger the life of the mother, if we were to wait for the union of all these signs before we determined the mode of proceeding. The child's death never causing such a sensible alteration in the natural order of the circumstances which have preceded it, as to make it known immediately, prudence must guide us in the choice of operations which may affect its life, or that of the mother.

1896. I have already remarked that there is a tumor formed in the *teguments* of the *cranium*, when the head of a living child is strongly pressed against the margin of the *pelvis*, or wedged in the superior *strait* †, and that that effect cannot take place, when the child's death has preceded the opening of the membranes, even a single instant. We also know that it softens and becomes flaccid, if the child, though alive at the beginning of labour, should die in the course of it. But the absence of that

* I have received children who had remained sound several months after their death. Their skins were white and shrivelled, as if withered: They had died long before the natural period of labour.

† See par. 1705.

tumor does not always indicate its death with certainty, as some have believed and published; any more than the flaccidity which succeeds to the elasticity which the tumor first had, when it takes place, though the head remain locked, as some have pretended. "When the head threatens to be locked," says the celebrated *Levret*, "a tumor is formed on the part which presents, which continually augments in volume and solidity, till it is unwedged, or the child dies: in the latter case, the tumor not only augments no farther, but it grows softer." He adds farther on: "If the tumor ceases to augment before the head is unwedged, it is a certain sign of the child's death."

1897. If from that circumstance alone, we were to determine to dismember the child, or open the *cranium*, we should sometimes have to reproach ourselves with having sacrificed the living. The tumor in question may soften from a cause very foreign to the death of the child, and without its ceasing to live. The flaccidity which succeeds to the elasticity it possessed at first, is sometimes the effect of an extravasation of fluids, which before were merely engorged. Another species of sanguine
tumor

tumor by extravasation, in consequence of the rupture of some of the veins *, frequently succeeds those elastic tumors. In labours which the deformity of the *pelvis* renders very difficult and tedious, touching inconsiderately practised, may favour the formation of both these tumors; and especially soften the former, without forming any considerable collection, but only an extravasation in the *sub-cutaneous* cellular membrane.

1898. The discharge of the *meconium*, the irregularity of the pains, and their cessation, are not more certain signs of the child's death, than the *factor* of the humours which drain from the *vagina*; or the separation of the *epidermis* from the part which presents to

* I have three times met with those sorts of tumors, and each time was in a first labour. At first, the *teguments* of the *cranium* were swelled, and the tumor was evidently elastic. It softened all at once, and augmented so far, in one of the children, that it equalled the half of a duck's egg cut across. The three children in question were born living; and had it not been for those extravasations of blood on the outside of the *cranium*, they would probably have been victims, like many others, of an *engorgement*, or rupture of the vessels of the brain. I shall publish my thoughts on this subject at some future time.

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the touch*. A coldness in the umbilical cord, its putrefaction, and the want of pulsation in its arteries are more certain signs of it; but

* Notwithstanding repeated observations which demonstrate the uncertainty of these signs, by presenting examples, as I may say, of so many victims to the use of crotchets, they are still frequently made use of. The following fact will perhaps inspire more diffidence in those symptoms, because there is no case, where they can be united in greater number, or where we should appear better founded in recurring to the crotchets. Being furnished with the forceps, which I had just successfully used in delivering Madame D***, the 15th of August, 1782, about the middle of the night, a poor woman in the neighbourhood desired my assistance; but from the bad state in which I found her, and the certainty I thought there was of the child's death, I determined to prefer the crotchets, but I deferred their application a few hours; as well because I had them not with me, as because the case presented more pressing indications than that of terminating the delivery. The poor woman had been two whole days in labour, the pains were now scarcely perceptible, the belly was exceedingly swelled, tense and painful; air of an insupportable *factor* was every instant discharged with noise from the *uterus*; and the fluids which drained from it were not less foetid. The child's head resting on the superior *strait*, appeared to be not at all advanced, and the small diameter of the *strait* was but three inches or thereabouts. The scalp was loose, pendant, and in a manner rotten; the *cuticle* and the hair came away easily and stuck to the finger. No motion of the child had been felt for more than twenty-four hours. The woman's pulse was weak, but very quick; her tongue, lips,

but we cannot judge of them, except when that part is without, or when it forms a loop across the orifice of the *uterus*.

1899. As these symptoms considered separately, present us but equivocal signs of the child's death, the concurrence of all, or the greater part of them at least, ought alone to authorize us to make use of cutting instruments, of the nature of crotchets and *perce-crane*s: and even then we ought to prefer the forceps, when we can use them.

and gums were black and parched: and every thing exhaled a cadaverous stench. Judging that the child was dead, I determined to extract it with the crotchet, and the instrument was already in my hand, when a fortunate presentiment led me to substitute the forceps, which I applied in the manner directed in par. 1807 and following; I extracted a child living and healthy: except a gangrenous slough which it had on the crown of the head, but which went no deeper than the skin, and cast off immediately. The mother, already very ill, remained so a long time, and had scarcely begun to mend a month after. *M. de Beauchefne*, M. D. was a witness of this labour, and generously attended the woman in the sequel.

ARTICLE II.

Cases which require the Application of cutting Instruments to the Child, and the Method of using them.

SECTION I.

Of the Application of Crotchets, and other Instruments of that Kind, to the Head.

1900. IF we attend to the form of the crotchets, and to their mode of acting, we shall see that they are not proper for extracting a child, but when the relation of the dimensions of the head to those of the *pelvis* is nearly in the natural order; for their action does not tend directly to diminish the too great volume of that part, as the forceps do, which act on two points of its surface diametrically opposite. It is then only in that case, and when we cannot procure the forceps, that we ought to use them.

1901. When we use the crotchet, where the

proportion of dimensions necessary for delivery does not exist, it only serves at first to procure an evacuation of the child's brain, and it is only by the help of the diminution of the *cranium*, which is the consequence of it, that we are able to extract the head. But this method of acting is not always free from accident, and we may open the *cranium* more methodically: I shall direct hereafter how we ought to proceed in it.

1902. The use of crotchets ought then to be very limited: though these instruments are equally capable of penetrating all parts of the child, we ought only to apply them on the head, or at most on the upper part of the *trunk* when the head has been torn off in the passage.

1903. The causes which ought to engage us to employ the crotchets exclusively, are all those which require us to terminate the delivery without delay, at a time when the head of a dead child occupies the lower part of the *pelvis*; or when we cannot, without danger to the mother, push it up again, and search for the feet though much less advanced; as when the waters have been long drained off, or when the *uterus* is strongly contracted, tense, and painful; lastly, when it is so softened by putrefaction,

faction, that the forceps cannot get a sufficient hold to bring it along.

1904. It is not indifferent to the success of the enterprise, whether we apply the crotchet to this or that part of the *cranium*. By placing it on the superior edge of the orbit, or on the stony *apophysis* of the temporal bone, as the greater part of practitioners, whether ancient or modern, have done, the head cannot advance without presenting its greatest diameter foremost, and turning on the back or one of the shoulders of the child; which generally prevents its being extracted without tearing away part of it, and discharging the brain, even when it is of a middling size with respect to the capacity of the *pelvis*. It is on the *occiput* that we ought to fix the crotchet when the head comes first; and on the upper jaw, or the forehead, when we are obliged to use it in preternatural labours, after the *trunk* is delivered. By acting in this manner, we make the head descend with one of its extremities foremost, and it presents only its smallest diameters in every part of its passage. We should likewise consider the particular direction which it ought to take in each position in which it

may present, that it may traverse the *pelvis* with the least possible difficulty.

1905. In every part of the operation, the parts of the woman must be secured from being hurt by the point of the crotchet; wherefore we must direct its application with the ends of the fingers; and place the thumb under the part where it is fixed, to receive it, in case it should slip as we pull the head along. The accoucheur must likewise, at this latter period, take the necessary precautions not to wound his fingers. The crotchet with a sheath, invented by *M. Levret*, had no other advantage than saving the accoucheur this little trouble, and hindering the point of it, slipped suddenly, from tearing the neck of the *uterus*, or other parts: but it is much less convenient than the common crotchet.

1906. It often happens that country surgeons, and even midwives, substitute any hook they can find, for the accoucheur's crotchet; but the application of those instruments is much more difficult, and less safe for the woman. I shall point out an instrument which they may procure any where, as well in the cabins of the indigent, as in the mansions of the

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the rich. It is composed of a cylinder of wood, of the thickness of the little finger, two inches long, and rounded at its extremities; a ribband or tape, at least an ell long, is to be fixed to the middle of it. The *cranium* may be opened with the point of the scissars, or of a common knife; the whole of the little cylinder of wood is to be introduced through the opening, where it places itself across; we then pull at both ends of the ribband *.

1907. The defect of proportion between the child's head and the *pelvis* of the mother, which requires the use of this kind of instruments, is very different from that which depends only on the bad situation of the head itself, and which we can remedy by changing its direction; it is such, that the dimensions of the *cranium* surpass those of the *strait* it has to clear, in length, and every possible direction. This defect of proportion may occur, either when the dimensions of the *pelvis* are smaller than in the natural state, or those of the head much larger:

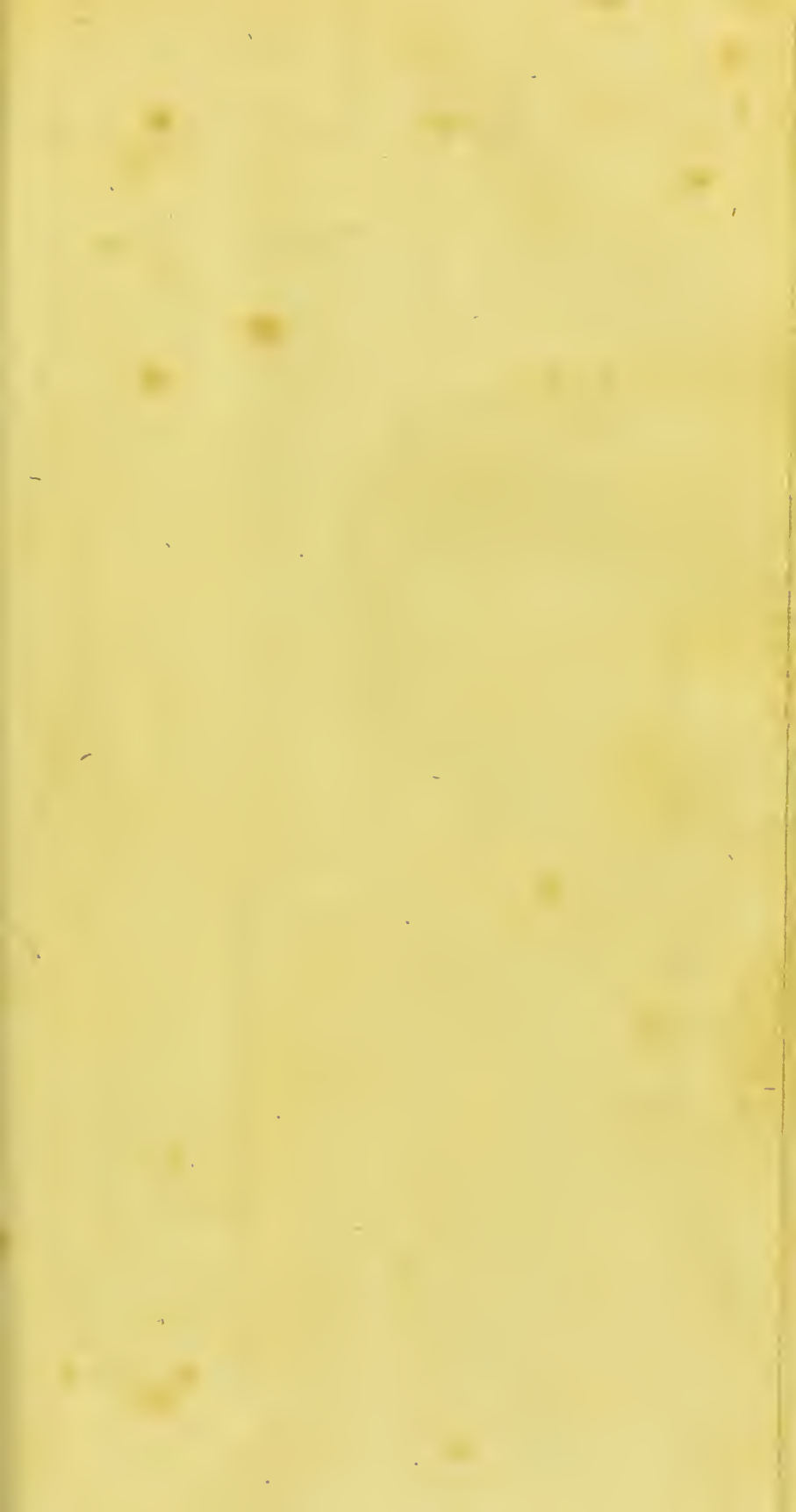
* This instrument acts in the manner of the *tire-tête à bascule*, well known to accoucheurs, and cannot have the inconveniences which attend the hooks that are sometimes applied by unskilful hands. I am indebted for the idea of it to *M. Danavia*, surgeon accoucheur of *Surinam*.

sometimes also we meet with both these faults at the same time.

1908. It is very rare that the diameters of the head surpass the natural dimensions of the *pelvis*, except in the case of an *hydrocephalus*; but it often happens that the dimensions of a deformed *pelvis* are inferior to the usual dimensions of the head; which constitutes two very different states, though presenting nearly the same indications with respect to delivery.

1909. All people of the profession know that *hydrocephalus* is the name given to a collection of water formed within the *cranium*; and sometimes also to a species of *anasarca* which is confined to the surface of the head, though it be not a true dropsy. I shall speak only of the first species*, and that without any regard to the distinctions which authors have made in it, that is to say, without determining the

* I am not ignorant that watery tumors have been found on the head, considerable enough to cause great obstructions to delivery, and that it has been necessary to open them to extract the child, or put the woman into a state to deliver herself by her own strength. But in those cases, a puncture is sufficient, either with a *trocar*, or any other convenient instrument; as the point of a pair of scissors, or of a knife, &c. The bounds of this volume will not permit me to adduce any examples which might appear interesting.



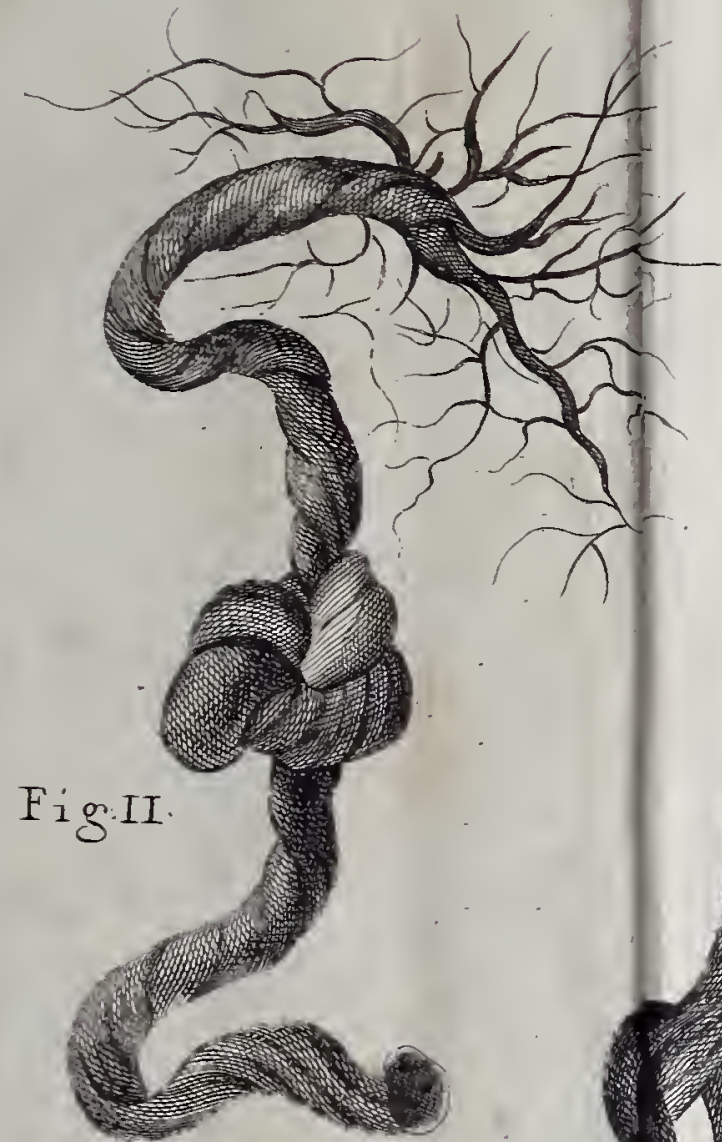


Fig. II.



Fig. I.



Fig. III.

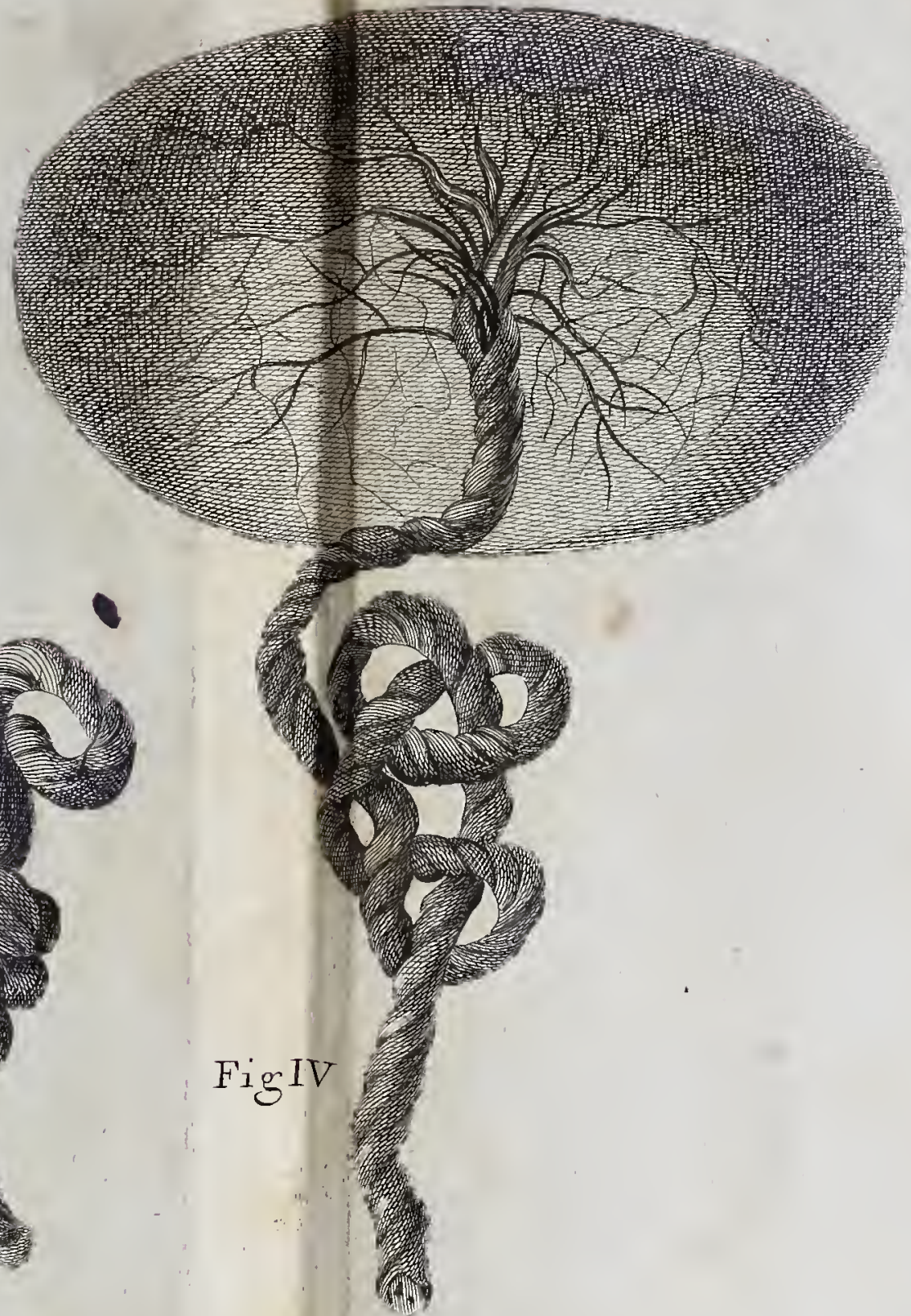


Fig. IV.

true feat of the extravasation; only considering this disease relatively to the obstruction it may give to delivery.

1910. All children affected by an *hydrocephalus* are not incapable of being born naturally; because the extravasation is not always so considerable as to obstruct it. It often happens that the labour is only a little longer, and more severe; a head which contains but a small quantity of water, being pretty supple, accommodates itself insensibly to the form of the *pelvis*, and at length clears it. But it is not so when the collection is so great as to separate the bones of the *cranium* and augment its size so far as to equal or exceed that of an adult: delivery is then impossible without the assistance of art.

1911. It is easy to discover this disease, by the state of the *futures* and *fontanelles*; for the latter sometimes exceed the breadth of the palm of the hand, and the former, that of one or two fingers. The bones of the *cranium* are moreover thinner and softer than in their natural state, especially towards their edges. The head, which is soft, hardens during the pain, in the same manner as the pouch formed by the membranes before they burst, and slack-

ens again as soon as it goes off. These signs are so evident to the touch, that they cannot be mistaken, even by young practitioners.

1912. The dropy of the *cranium*, in such a degree as to augment its size so excessively *, is a disease so dangerous to the child, that no practitioner, I believe, would propose the Cæsarean operation with a view of extracting it alive; for it would be exposing the mother to too much danger, for a child which she would have the mortification to see expire as soon as it was born, or shortly after. It is better to discharge the water by plunging the point of a pair of scissars, of a trocar, a bistory, or of a common knife, into one of the *sutures*, or *fontanelles*. That puncture is often sufficient to enable the woman to deliver herself, as is proved by the following fact.

1913. An unfortunate woman, who for two days had given herself up in vain to the most violent efforts, accusing her midwife of ignorance, sent for another, from whom she, in fact, received more efficacious assistance. The latter finding a flaccid tumor at the orifice of the *uterus*, and which hardened during the

* In a case of this kind, four quarts of water, poured into the child's *cranium*, only moderately filled it.

pain, persuaded herself that the membranes were still whole, that the woman had only discharged false waters, and endeavoured, but in vain, to burst them with her finger; after which she plunged in the point of her scissars, and by that means gave an exit to a quantity of water, which she supposed to be the *liquor amnii*. From that time the head began to advance, but in an extraordinary form, which disconcerted the second midwife, and made her send for an accoucheur. He had nothing to do but to relieve the parents from the afflicting idea, of having, as they said, engendered a monster; the woman being only delivered of an hydrocephalic child, whose skeleton I have preserved.

1914. An hydrocephalic child does not always present the head, and unless it be found in the neighbourhood of the orifice, sometimes we are obliged to turn it, and bring it by the feet. In that case, we do not discover the disease till after the exit of the *trunk*, or, at least, till the volume of the head, augmented by the water, obstructs the delivery: for things go on as usual, till it arrive at the superior *strait*. When it cannot clear that, it is proper to open it, as in the former case: but we then do it by

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plunging

plunging the instrument towards the *fontanelles* which are at the bottom of the *lambdoidal suture*, or even in the occipital hole, behind the first *cervical vertebra* *.

1915. A simple puncture of the *cranium*, in the case of an *hydrocephalus*, is sufficient to evacuate the waters, and reduce the head to the size proper for its exit: but it is not so when the disproportion, which obstructs it, depends on a deformity of the *pelvis*. Besides that a similar puncture could not prepare an exit for the brain, a solid and well constituted head cannot shrink and contract like one that is hydrocephalic. Though the indication, arising from a defect in the capacity of the *pelvis*, is the same as in that where the accidental size of the child's head renders delivery impossible, though in both cases that indication consists in diminishing the bigness of the head, yet we

* In a case of this kind, but which was not discovered at the time when the first efforts were made for extracting the head, after bringing down the arms, the water extravasated in the *cranium* diffused itself over the whole body with a remarkable celerity. More than forty pupils, witnesses of the fact, observed, as well as I, the progress of this *infiltration*, which began at the neck, and extended to the feet. The child was dead. The *cranium* would have held a quart of fluid.

must

must set about it very differently. Every kind of instrument, provided it be pointed and sharp, may serve for opening the *cranium* in case of an *hydrocephalus*, and little dexterity is necessary for its application : but in the other case, a great number have been invented; either for dividing the head, or for extracting it ; and their application requires a great deal of care.

1916. The greater part of those instruments, known by the name of *tire-tête*, such as that of *Mauriceau*, that of *Levret*, whether with the swinging cross or with three branches *, the *tire-tête* with a double cross by a surgeon of *Toulouse*, &c. &c. as they cannot sufficiently diminish the volume of the head, are no more convenient than the common crotchet, when the *pelvis* is much distorted. The crotchet is even preferable ; but we ought not to use it till we have first satisfied the indication presented by the fault of the *pelvis*, that is to say, till we have opened the *cranium*, to empty it

* The mechanism of this instrument is sufficiently simple ; but though very ingenious, it is useless. *M. Alphonse le Roy* certainly was not acquainted with it, when he published that its excessive complication was all that was wonderful in it.

and cause it to contract *. Many practitioners however use it to procure a discharge of the brain, though it only acts by tearing the bones, in such a manner as to produce points and asperities, which may hurt the fingers of the accoucheur, as well as the parts of the woman. We may proceed in a different and more certain method.

1917. *Mauriceau* used a kind of lance for opening the child's head; *Smellie* proposed very long scissars, whose edges were at the part which forms the backs of common ones; and *Deventer* preferred a table-knife, the blade of which he surrounded nearly the whole of its length with a bandage of fine linen. The choice of a proper instrument for this purpose is not difficult. When we cannot procure *Smellie's* *perce-crane*, if the instrument we have be very pointed and sharp, besides the bandage with which *Deventer* surrounded it, we ought to arm the point with a little ball of wax, in order to introduce it more safely, and without wounding ourselves, as far as the child's head.

1918. We ought always, if possible, to open

* We cannot too often repeat that nothing but the child's death can authorize this procedure.

the *cranium* in the *sutures*, and especially in the *sagittal*. A crucial, or angular incision, would more certainly favour the contraction of the bony pieces which form that cavity, than a simple incision, and would consequently be preferable. The head is never more favourably disposed for this operation, than when it presents the *vertex*, and the operation is so much the easier, as it is farther advanced, and more wedged between the bones of the *pelvis*.

1919. The instrument is to be directed by the help of some of the fingers, which have been previously passed into the *vagina*; and must be plunged into the *cranium*, after having detached the little ball of wax from it, with the extremity of one of them; we afterwards enlarge the opening to a convenient extent, by drawing and pushing alternately with the hand which is without, as if we were sawing; taking care not to entirely disengage the point of the instrument from within the *cranium* at each stroke. We must also take the necessary precautions not to wound ourselves, as well as to guard the parts of the woman from the edge*.

* An instrument which, like *Smellie's* scissars, would make the incision at one stroke, would doubtless be preferable to any other.

The *cranium* being sufficiently open, we withdraw the instrument, and introduce the fingers to evacuate the brain. We afterwards press the head, with the same hand, to lessen it; and bring it along, either with the fingers bent within, or a crotchet applied on the *occiput*.

1920. If we have attempted to extract a child by the feet, in a case where the *pelvis* is not large enough for the passage of the head, we must open the *cranium* with the same care. But as we cannot then carry the instrument into the *sagittal suture*, we must cut into the middle of the forehead, and on one of the branches of the *coronal suture*, or in the direction of the *lambdoidal*, to make an angular section. By means of that section we may easily bring down the *occiput*, or one side of the *os frontis*, or force them inwards, and give an easy exit to the brain. By proceeding thus, we avoid much difficulty, and often prevent the detachment of the child's head.

1921. Whenever we have emptied the *cranium*, it is proper to inject warm water into the *uterus*, after the delivery is completed; to wash away the remains of the *brain* which might be retained in that *viscus*, or in the *vagina*: but it is not necessary to repeat it.

SECTION II.

Of the Retention of the Child's Head after the Trunk is torn from it, and the Method of extracting it.

1922. It sometimes happens in preternatural labours, when the child is brought by the feet, that the *trunk* is torn away from the head, and the latter left behind. Though a skilful man may always avoid this disagreeable accident, yet he cannot flatter himself that he shall never be called when others have exerted such manœuvres as to cause that separation.

1923. We may avoid tearing away the child's *trunk*, either by directing the head properly, or by applying the forceps, or by opening the *cranium* to lessen its bulk; for that accident is always a consequence of the omission of one or more of those three things.

1924. A deformity of the *pelvis* is not so often the remote cause of this accident as is supposed. The child's head may stop at either of the *straits*, though large enough to give it a passage if well directed. Experience has supported this truth a thousand times; since in

many cases, changing the position of the head has been sufficient to enable the woman to expel it, or to be delivered of it without any other assistance than that of the hand. The head, though properly directed, is not always secure from being torn off, if the accoucheur knows no other rules to bring it along, than those of pulling at the *trunk*. Sometimes the dimensions of the head so surpass those of the *pelvis*, that it cannot be brought along in any way, especially if the bones are already so solid, and the *sutures* so close, that it cannot lessen, and mould itself in some degree to the form of the canal.

1925. An excessive putrefaction of the child is also one of the predisposing causes of the separation of the head ; but, in all cases it is the efforts which the accoucheur exerts inconsiderately on the *trunk* without, which are the immediate or efficient cause of it.

1926. All practitioners have not considered this circumstance in the same curative point of view ; some having thought that the head could not be extracted too speedily ; and others advising us to leave its expulsion to the efforts of nature : but error seems to have guided both parties. The conduct to be pursued must be different

different according to the nature of the circumstances. There would be no fewer inconveniences in committing the expulsion of the head to Nature indiscriminately in all cases, if there are any where we ought to do it, than in always proceeding to extract it without delay. To how many dangers should we not expose a woman, by thus abandoning a head wedged and fixed lengthwise in the superior *strait*; and much more one whose volume should so far exceed the dimensions of that *strait*, that it could not engage in it, though directed in the most favourable manner, and pulled with force enough to separate the *trunk* from it? How can Nature deliver herself of this foreign body, in a woman overwhelmed with lassitude and exhausted by the efforts which have preceded the beheading of the child? But the partisans of the opinion which I combat, will doubtless say, we are acquainted with the resources of Nature; putrefaction will come to her assistance; she will employ that means to weaken the union of the bones of the *cranium*, and even to destroy it, and separate them; after which she will rid herself of them, one by one, as has been frequently observed in women, where the head, lessened or softened, yet could

not traverse the canal of the *pelvis*. But it would be absurd to take such examples for rules, in this case: for it is certain, that for one woman who has survived all the dangers which arise from the putrefaction and long detention of the head, and whose history has been carefully transmitted to us, a great number of others, victims to the ignorance or credulity of the persons in whom they had placed their confidence, have been buried with the melancholy remains of their children.

1927. At most, it should only be permitted to abandon the expulsion of the head to the efforts of Nature, in those cases where its dimensions are so inferior to those of the *pelvis*, that it may pass through it easily; if we could be certain of that. But as we cannot discover this favourable relation without passing the hand into the *uterus*, except in a labour at seven or eight months, why should we not deliver the woman of this foreign body, when the *pelvis* is well formed, since we can then do it with the hand alone, and without much difficulty? Nature finds much greater obstacles in expelling a head separated from the *trunk*, *cæteris paribus*, than in delivering herself of one which is still attached to it; because, being loose

loose over the entrance of the *pelvis*, it takes different situations according to the friction it suffers, but seldom that which would be most favourable to its exit. Therefore we ought not to dispense with introducing a hand into the *uterus*, either to assure ourselves of the volume of the head retained in it, or to direct it properly in the different periods of its passage, if we commit its expulsion to the efforts of Nature. I am moreover of opinion, that we ought always to spare the woman this painful labour, often very long, and sometimes dangerous; and that it is our duty to extract the head.

1928. When its volume does not exceed the extent of the openings of the *pelvis*, its separation from the *trunk* having proceeded from no other cause than the ill-directed efforts exerted on the latter, the hand will suffice to extract it. We first examine if the greatest length of the *cranium* be placed according to the greatest diameter of the superior *strait*, and direct it so, if it be not. We afterwards hook it by means of two fingers insinuated into the mouth, and the thumb placed under the chin, or on the posterior part of the neck, of which there is almost always a portion left. We pull towards us and according to the axis of the *pel-*

vis, till the head has cleared the superior *strait*, while the woman pushes strongly downwards. When it is descended into the cavity of the *pelvis*, we turn the face underneath, and continue to pull at the lower jaw, raising the hand a little, in order to bring the chin to the *vulva*, and disengage it entirely. If the lower jaw has been torn off, we must use a crotchet, and fix it in the top of the forehead. See par. 1904.

1929. If Nature still finds resources in herself; if she can, strictly speaking, deliver herself without help in the case we have just stated, it is not so when a considerable disproportion exists between the dimensions of the head and those of the *pelvis*. The woman has then, in fact, no certain resources but in the assistance of art, and the application of instruments. We should expose her to an almost inevitable death, if we were to commit the expulsion of the head to Nature, for she could not deliver herself of it, but by the effect of putrefaction, and that is a fruitful source of accidents. This case is therefore evidently within the province of art; it presents the same indications as if the head were still attached to the *trunk*; but it is a little more difficult to accomplish them.

1930. Various instruments have been proposed for extracting the child's head after the *trunk* has been torn from it; but the means of preventing that accident have been scarcely thought of: though that would have been much more easy. Some have recommended the use of crotchets; and others of fillets applied on the lower jaw. Some have invented particular kinds of *tire-tête*, and different species of nets and flings; and others have recommended the application of the forceps alone. If these different methods have sometimes succeeded, the disproportion between the dimensions of the *pelvis* and those of the head was doubtless trifling; since none of them, except the forceps, directly tend to diminish the bigness of the latter. The diminution produced by the forceps is also, as is well known, very limited; and their application in this case is so difficult, that it is to be feared we might introduce them twenty times before we should be able to take hold of the head properly; at least, unless it were already in the cavity of the *pelvis*. I do not think them recommendable except when the head is very low, or when it is wedged lengthwise; and when its dimensions are very little beyond those of the *straits*. It is absolutely necessary to open the

cranium and discharge the brain from it, when it is entirely above the *pelvis*, if its volume be so great that it cannot enter that cavity.

1931. Some practitioners, according to the advice of *Celsus*, have ordered us to press the belly of the woman to fix the head at the entrance of the *pelvis*, while we open the *cranium*; and others, with the same view, have advised the application of a fillet on the lower jaw, or placing a crotchet on any other part. These latter instruments appear useless to me, and the compression of the belly dangerous. The accoucheur may accomplish these views perfectly, with the hand which he introduces into the *uterus* to direct the instruments destined to open the *cranium*. He must begin by bringing the crown of the head to the superior *strait*, in a transverse situation, and fix it so, by bending the fingers over the base of the *cranium*. He must then conduct the instrument, which he holds with the other hand, along the thumb, and direct its point, armed with a little ball of wax, into the course of the *suture* it is designed to penetrate, to open the *cranium*, as directed in par. 1919. After having withdrawn the instrument, we may pass several fingers into the *cranium* to force out the brain, and lessen the bulk of the bony case, in order
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to bring it along with the same hand; or, if that fail, by means of a crotchet placed on the face or on the *occiput*.

1932. Though this operation is absolutely necessary when the volume of the head is such that its dimensions far surpass those of the *pelvis*, and though in all cases it is better to extract the head, than commit its expulsion to Nature, we are often obliged to temporize, and first attend to the more pressing indications presented by the inflammatory state of the *uterus*, of its neck, &c. &c.

S E C T I O N III.

Of the Beheading the Child, or the Separation of the Head from the Trunk; and of several other Cases which require the Application of cutting Instruments to the Trunk itself.

1933. As the *trunk* may be separated from the head in preternatural labours where the child is brought by the feet, so also where the head presents first, it may be separated from the *trunk*, and the latter be left in the womb of the woman. A neglect of some of the fundamental principles of the art, a putrefaction

faction of the child; and a preternatural bigness of the *trunk*, whether it arise from a monstrous conformation, or from an extravasation of fluid in one of its cavities, are so many predisposing causes of this accident.

1934. It is always much easier to extract the *trunk*, after the head has been torn from it, than to deliver the woman of the *head*. To change the direction of the shoulders, is sometimes sufficient to enable us to bring it along easily, either with fillets or blunt hooks placed in the armpits, or with common crotchets fixed in the top of the breast or back. *M. Levret* seems to have proposed his crotchet with a sheath at first for this case only. When the shoulders are still above the superior *strait*, we may bring down the child's arms, and apply fillets on the wrists, with a view of pulling with one hand to extract the *trunk*, while with the other introduced into the *vagina* we keep the portion of the neck, if any remain, in the direction of those same extremities. Sometimes, instead of bringing down the arms, it is better to turn the *trunk* and extract it by the feet.

1935. When the breast or the *abdomen* contain water enough to render these efforts fruitless, we must evacuate the fluid, by opening

the cavity which contains it, either with a crotchet or any other proper instrument. But when the monstrous conformation of the *trunk* prevents its exit, it must be divided as will be stated in the following paragraphs.

1936. A dropfy of the breast is excessively rare in the *fetus*, as well as that of the *abdomen* in the degree that would render delivery impossible without help; and it scarcely ever disturbs the natural order of that function.

1937. It is extremely difficult to be assured of the existence of this disease when the child presents the head. If we have a right to presume that it is dropfical, when that part, though of a moderate size, ceases to advance, notwithstanding violent efforts on the part of the woman, yet we cannot discover it certainly but by introducing the hand as far as the seat of the extravasation; which is not easy, because the head which then fills the passage, strongly opposes those researches. But it is not so when the child presents the feet; as they are scarcely without before those difficulties manifest themselves, we may easily insinuate the hand along the thighs to judge of the nature of the obstacle. A dropfy may be known

known by the size, by the tension of the belly, and especially by the fluctuation.

1938. Being perfectly discovered, the indication relative to delivery is not difficult to determine: the water must be evacuated, by opening the belly or the breast. Very long scissars, the point of a crotchet, a common knife, and especially that which some have proposed for opening the *cranium* are equally proper to accomplish the views of the accoucheur. *M. Levret* preferred tearing the *teguments* with the finger, at the umbilical ring: but we succeed with much more difficulty in that manner than with instruments.

1939. A very small incision will suffice; and we ought not to make a large one but when we are certain of the child's death. The part in which it is made is of no importance in the latter case, and it is only when the child is alive that we ought to prefer one place to another. After opening the belly we place two fingers separated at the sides of the incision, to press it a little and favour the discharge of the water, which without that precaution might still find some obstruction to its exit; because the neighbouring parts of the woman, against
which

which the surface of the child immediately applies, may stop the opening.

1940. The misconformations which a child may present at birth are very numerous: but they do not all equally merit the name of monstrosities, nor give the same obstruction to delivery. Those which consist in the want of certain essential parts, as the head or the extremities, seem more likely to favour it, than render it more difficult: but it is not so in those extraordinary conformations where several heads are placed on one *trunk*, two *trunks* attached to the same head; or in which twins are united, either by the *teguments* only, or by other parts, so as to form but one whole: as is frequently observed.

1941. It is not my purpose to search after the cause of these surprising phenomena; I shall leave it to naturalists more enlightened than I am, to decide whether they depend on the disorder of the mother's imagination, or proceed from any other cause, that I may consider the indications they present relative to delivery.

1942. The examples of some deliveries which have been performed by the efforts of Nature alone, notwithstanding so strange and monstrous

monstrous a conformation *, far from throwing any light on the rules to be observed in such cases, only make us more uncertain what method to determine on : these are cases where the ignorant seem to triumph, while the man of skill dares propose nothing. Though experience teaches us that there have been women so happily constituted as to deliver themselves without help of a child having two heads or two trunks, it also teaches us that the assistance of art sometimes becomes necessary †

1943. It

* In 1763, a woman of the town of *Amiens* was delivered very naturally and without any other assistance than that of a neighbouring midwife, of a living child who had two heads, two *trunks*, and six or seven extremities as well superior as inferior. Each head was nearly of the natural size, and the body of the second child appeared seated on the left arm of the first. I shall observe in favour of the opinion of those who attribute these effects to the force of the mother's imagination, that this woman had passed almost the whole time of her pregnancy at the feet of an image of the virgin situated in one of the church-yards of the town ; sacrificing all her domestic affairs to the love she had conceived for this statue, when she became pregnant. Three other children of a similar conformation, were born with as little difficulty at the time I was employed about the first edition of this work ; one at *Paris* ; another in a neighbouring village ; and the third in *Bretagne*.

† At the time when the disputes concerning the section of the *pubes* were at the greatest height, some public papers mentioned

1943. We cannot discover these sorts of monstrosities but by carrying the hand into the *uterus*; and even then it must be difficult to distinguish exactly what they are, on account of the manner in which the child is folded up, and the confusion in which all its limbs present to the touch.

1944. It is impossible for the two heads of a child thus formed to engage at the same time, when they present first; whether the delivery be performed without assistance or not; one of them always turns back on the *trunk* while the other descends. The same thing happens with respect to the inferior extremities when the child is extracted by the feet, unless we take care to bring them all down: but in this latter circumstance, we cannot hinder the two heads from presenting and engaging together; which renders their exit extremely difficult. In all cases, the mother's *pelvis* must be excessively large, for her

mentioned that the Cæsarean operation had been recently performed and with success, by *M. Zimmerman*, surgeon major of the regiment of *Sterburi*, to deliver the countess of *Chercy* of a child which had three heads. But I cannot certify the truth of the fact.

to be delivered by the natural passage without mutilating the child.

1945. It would be very useful if we could early distinguish the cases of this kind where Nature could dispense with the assistance of art, from those where that assistance is indispensable; that we might not expose her to fruitless efforts in the latter, and leave her at liberty in the former. But it is not less difficult then to explore the bounds of her power, than to fix on the best method to be employed when she is unequal to the task.

1946. When we reflect on the difficulty of dismembering in the womb a child so misformed and so monstrous as those in question, independently of the danger which may result from it to the woman herself, we find it hard to decide whether such a procedure be preferable to the Cesarean operation. Or is it allowable to take that method when the child is living? Though monstrously formed, has it no right to life, and do the laws authorize us to destroy it, to save the mother from an operation which does not appear to us, either more painful, or more dangerous for her, than that by which it is pretended her life might be secured?

secured? If we knew the history of all the women who have undergone the Cefarean operation, and of those whose children have been dismembered with crotchets or other instruments of that kind, perhaps we should find, that in an equal number, death had spared fewer of the latter than of the former. But every one has related his successes, and seems to have thrown a veil over the rest.

1947. Yet if we could have any certainty of the death of a child thus formed, and if we could clearly perceive the possibility of separating the superfluous parts without injuring the mother, we ought to prefer that resource to the Cefarean operation. We ought also to have recourse to it, if two twins, though living, were only joined by a portion of their *teguments*; except it were by the tops of their heads only, as we see in the tables of *Ambrose Paré*; because they might then be extracted without separating them, and the operation be performed with more certainty after their birth.

1948. We must reckon among the monstrosities of the child, relative to delivery, large tumors which it is sometimes born with. I have seen one whose dimensions far surpassed those of the head of a *fœtus* at full time; being

five inches long, and four thick in every direction. It was placed at the bottom of the *trunk*, and hung between the thighs. Its nature was fungous and *steatomatose*: its surface was furnished with a great number of veins, and presented the same appearance as the surface of the brain covered with the *pia mater*, so thin and transparent was the skin become. The head passed through the *pelvis* without much difficulty, but I found a great deal in extracting the *trunk*, and, notwithstanding my utmost care, the child died in the passage. Having no longer any concern for the child, I proportioned my efforts to the resistance I met with, the *teguments* of the tumor burst, and it lengthened and accommodated itself to the form of the *pelvis* *.

* We meet with a pretty similar example in the work of *Peu*. Since the time when I observed that tumor, I have met with two others nearly of the same size, and also situated at the bottom of the *trunk*, but they contained only water. *M. Piet* presented the Academy of Surgery, in 1787, with an example of one much larger still, which he was obliged to open, to finish the extraction of the child: he estimated the diameter at a foot. It was formed in two lobes at the lower part, one of which was smaller than the other. The *cyst*, covered with the *teguments*, distended and dried at the time I had a sketch taken of it, presented the following dimensions.

Its

Its breadth, from one thigh to the other, and above its division into two lobes, was nine inches and an half, and its height seven inches and an half; the breadth of the great lobe, and its thickness from before backward, five inches eight lines; the breadth and thickness of the small lobe four inches and an half.

C H A P. VI.

Labours which cannot be terminated without the Application of a cutting Instrument to the Parts of the Mother.

1949. **T**HE causes which may oblige us to apply a cutting instrument to the parts of the mother, with a view of favouring delivery, are very numerous, though they are rarely met with; but they are not all equally disagreeable. Sometimes a simple incision, or the extirpation of a tumor, renders the natural passage accessible to the fœtus; while at other times, we are obliged to open it a new way through the coverings of the *abdomen*, and the very substance of the *uterus*.

1950. We may refer all these causes, 1. to a vicious conformation, either natural or accidental, of the soft parts destined to form the passage; 2. to a deformity of the *pelvis*; 3. to conceptions out of the proper place, otherwise called *extra-uterine*; 4. to the rupture of the *uterus*.

A R T I C L E I.

Of the vicious Conformation of the soft Parts of the Woman, which constitute what is commonly called the Passage, considered as a Cause of laborious Labour.

1951. A VICIOUS conformation of the soft parts of the woman may be from birth, or accidental. In the first case, the defect may consist in an agglutination of the *labia*, in a narrowness of the entrance of the *vagina*, on account of the form and hardness of the *hymen*; in the small size of that canal, or the membranous intersections which are sometimes found in it; in a partial closure of the neck of the *uterus*; lastly, in the privation of all the external parts which form the *vulva*. The accidental misconformation of all these parts may be an effect of the presence of a tumor, or the consequence of ulcerations which may have caused preternatural adhesions.

1952. Though it is easy to perceive the indications presented by these different states, relative to delivery, it is not always equally

easy to fulfil them. We may, without much danger to the mother, and without any great difficulty, separate the *labia* when they are united; cut the *hymen* when it obstructs delivery, as well as the partitions which are sometimes found within the *vagina* or neck of the *uterus*; divide the bridles which prevent the canal from dilating; or open an abscess which stops the passage: but how shall we destroy indurations and profound callosities, which often contract the *vagina* to that degree as scarcely to leave a passage for the menstrual blood? How can we extirpate a scirrhus or adipose tumor, whose base is very broad, and distant from the external parts? Those who have advised such operations, have they sufficiently considered the difficulty of executing them, and the danger which attends them? As it is not possible to conceive all the shades of complication which may be met with in these different states, with sufficient precision to prescribe particular rules in each of them, I shall only speak of some of them; the others appear to me to be cases which must be left to the sagacity of the surgeon who meets with them, and in which he must prescribe laws to himself.

1953. Among the tumors which may arise in the parts of the woman, some are inflammatory and are formed suddenly; others are of an indolent nature and increase slowly: but all, according to their volume and situation, may give more or less obstruction to the exit of the child.

1954. It is easy to discover the nature of the greater part of these tumors; but there are some which may be confounded with others to which it would be dangerous to apply a cutting instrument; as in those *entero-vaginal* hernias described by *Garangeot* *, and the hernias of the bladder mentioned by several authors. We may easily distinguish an abscess which is the consequence of an inflammatory tumor, from an indolent deposition; because the previous symptoms are not the same: but we often cannot discover the nature of the latter till we have opened it. It is this species which we sometimes find difficult to distinguish from the hernias I have mentioned, and more difficult still from certain sanguine tumors seated in the cellular tissue of the *vagina*: which ought to render us extremely circumspect in open-

* See the Memoirs of the Royal Academy of Surgery, tome i.

ing them when they obstruct delivery. Though certain that they are humoral, if their nature remains doubtful, we ought to make but a very small incision; but we may act with less reserve in opening tumors that have been inflammatory.

1955. An *œdema* is the most usual of all the tumors which may arise in the parts of the woman; and the cellular substance within the *pelvis* is not always exempt from that *infiltration* which sometimes extends even into the substance of the *symphyse*s. A moderate *infiltration*, far from opposing delivery, rather favours it, by weakening the tone of the parts which form the passage, and moistening them; but a more considerable *infiltration* may obstruct it, or render it very difficult: as we see when the *labia* are very thick and tense; when the anterior part of the *vagina* forms a large tumor without, which contracts the entrance of that canal; lastly, when the infiltrated fluid spreads far and wide into the whole of the cellular substance within the *pelvis*. In all these cases, we are obliged to make scarifications in the inside of the bottom of the *labia*, to disgorge the parts and render the passage accessible to the child.

1956. Varicous tumors are the most frequently met with after the *œdema*; but they are almost always very small and very numerous. They are found particularly in the *labia*, and in the internal parts of the *vagina*, and I have met with them even in the neck of the *uterus*. The veins which wind through the cellular substance of the *vagina* and of the neighbouring parts, may also dilate and become varicous*. Though these tumors seldom acquire a sufficient volume to oppose the exit of the child, their bursting may at least give some obstruction to it, by causing an extravasation of blood in the cellular tissue of the surrounding

* A woman whose *pelvis* had but two inches eight lines in the diameter of its entrance, having suffered no extraordinary accidents in the first eight or ten days of her lying-in, though the labour had been exceedingly laborious, on the twenty-second was seized with a considerable flooding, being then walking in her chamber: but this flooding, which lasted but an instant, did not hinder her from getting up the next and the following days, till the thirtieth, when she sunk under a fresh hæmorrhage, which lasted no longer than the former. On opening the body, we found a purulent collection in the cellular substance which surrounds the right psoas muscle, and a considerable varicous *sac*, lined with sanguine concretions, which had opened with the abscess at the superior part of the *vagina*, a little anteriorly. The *uterus* was small, compact and shut, and contained not a drop of blood within.

parts, as appears by the following case. A woman whose external parts of generation were affected with varicous tumors at the time of labour, was scarcely delivered before she was again attacked with pains, which made her imagine she had another child, and obliged her to send for *M. Solayres*, from whose theatre she had just retired. That accoucheur, suspecting that the retention of a clot of blood might be the cause of those pains, and endeavouring to certify himself of it by the touch, found the passage so stopped that he could not introduce his finger into it. It not being easy to discover the nature of the tumor which occupied all these parts, by the touch, he uncovered the woman, and saw that the *labia* were turned from within outwards, the *nymphæ* in a manner effaced, and the lower part of the *vagina* inverted; that those parts were considerably swelled, tense, and of a colour which denoted a sanguine infiltration. Surprised at such a phenomenon, of which he had never seen an example, *M. Solayres* sent for *M. Levret*, who could not come, but sent his senior pupil. They prescribed emollient and discutient lotions and cataplasms, waiting till other indications should present. Several days afterwards the

lochia

lochia began to appear, the *vagina* became accessible to the finger, the pains abated a little, and the tumor softened and shrunk. The woman discharged a great deal of putrid bloody humour, which was looked upon to be produced, as much from the disgorgement of the cellular substance of the tumor and of the neighbouring parts, as from the *lochia* retained in the *uterus*. *Solayres* attributed the tumor to the bursting of one of the varicous veins already mentioned; and the disgorgement of it, to an opening which Nature had made towards the farther end of the *vagina*, though he could not discover it by the touch.

1957. Admitting these conjectures, the first of which seems exceedingly well founded, the bursting of the varicous tumor must have happened during the efforts of labour, though the sanguine inundation did not take place till afterwards: which may be easily understood by considering the compression which the cellular substance within the *pelvis* must have suffered during the passage of the child. If that inundation had manifested itself sooner in so great a degree, it is certain that it would have obstructed delivery, and that it would have been necessary to scarify the inside of the
labia,

labia, to promote their depletion, as well as that of the more distant parts, in order to favour the exit of the child. It is therefore sometimes convenient to open varicous tumors which appear without, to prevent the rupture of those which are concealed, and that species of sanguine *infiltrations* of which we have just treated; although those tumors could not of themselves give any great obstruction to delivery.

1958. Scirrhus tumors, either with a small neck or with a large base, may also affect the soft parts situated within the *pelvis*, as well as the external parts. But we cannot always with the same ease extirpate them, and render the passage accessible to the child. When they have a small neck or stalk, whatever part they may occupy, it is easy to free the woman from them, and especially in the time of labour; because the child's head pushes the body of those tumors outward, and brings their neck near to the external parts. Besides, they cannot produce any great obstacle to delivery. But it is not so with those that have a very large base; which occupy much of the cellular tissue of the *vagina* and neighbouring parts; which have broad adhesions to the neck of the bladder,

bladder, or the *rectum*, or which extend very far on the neck of the *uterus*. I have already said that, in such cases, the choice of the method of delivering must be left to the discernment and prudence of the surgeon employed: I think it possible to meet with cases of that kind, in which the Cesarean operation would be preferable to the total or partial extirpation of such tumors.

1959. *Polypi* of the neck of the *uterus* and of the *vagina*, considered relatively to delivery, must be ranged under the head of scirrhus tumors of the first species; and *steatomatose* tumors under that of *scirrhi* with a large base. Though we may extirpate *polypi* like the former, we cannot remove the other with less danger than attends the Cesarean operation.

1960. Sometimes the pad which constitutes the neck of the *uterus* in the latter periods of pregnancy and in time of labour is hard, scirrhus, incapable of any extension or dilatation, so as entirely to hinder the exit of the child. After a convenient delay to ascertain that the efforts of Nature cannot overcome the resistance, and the administration of proper methods to relax it, it must be cut in several places, as some practitioners have done. Those
incisions

incisions are preferable to rents which might take place in it, and have never been attended with the same consequences. They must be made more or less extensive, according to the thickness of the pad which is callous, but always so much so, that the orifice may afterwards open sufficiently.

1961. The orifice of the *uterus* may be closed, either completely or incompletely, at the time of labour. Its perfect closure is always posterior to conception; but an incomplete one might exist before. In all cases, the orifice must be restored to its original state, and be opened with a cutting instrument, as soon as the labour shall be certainly begun.

1962. The presence of a pretty large stone in the bladder has been regarded by some authors as another source of obstacles to delivery; because it may engage below the child's head and stop its course *. It has been recommended

* Doctor Planque relates an example of it, in his *Bibliothèque Choisie de Médecine, tome i. extrait du Mercure d'Octobre, 1734*. The stone was eight inches in circumference, and one inch two lines thick. The woman was delivered two hours after the extraction of it. *M. Lauerjat* also quotes one, in which he says the high operation was performed. If this case is not the same as the preceding, *M. Lauerjat* should

mended to push both of them back, and to place the stone on one side, that the head might engage alone: which in my opinion is better than to cut the anterior part of the *vagina* and the bladder on the tumor formed by the stone, as others have advised. The latter precept can only be applicable in exceptions to the general rule; as in those cases where the child's head has been some time in the cavity of the *pelvis*, and cannot be pushed back; the *tumor* formed by the stone being without.

1963. I was a witness of a fact which has the greatest affinity with what I have just stated concerning the stone in the bladder: it was a case of a tumor of one of the *ovaria*. Perhaps the fact is *unique* in its kind; if it is so, it only merits so much the more to be known to accoucheurs.

1964. The tumor in question was the breadth of six or seven fingers long, and about an inch and an half thick. One of its extremities, similar to a large hen's egg cut across, is a kind of bony rock, furnished interiorly with nine solid well formed teeth, among which may be observed *incisors*, *canines*, and

should have named its authors. *Nouvelle Méthode de pratiquer l'Opération Césarienne*, page 12.

several

several *molars* *. The rest of the tumor was of a *steatomatose* nature, and contained a great deal of pretty long hair interwoven in the humour which constituted it.

1965. The bony portion pushed down by the child's head, in the efforts of labour, below the base of the *sacrum* and a little towards one of its sides, was a long time taken for the projection of that bone carried far forward. The small space which it seemed to leave in the little diameter of the superior *strait* had made one of the two accoucheurs whom I found with the woman, believe, that the Cæsarean operation was the only resource left to deliver her. That operation had been proposed, and it was almost decided to perform it when I arrived; but my opinion was against it. Notwithstanding the tumor which I took for an *exostosis* of the projection of the *sacrum*, on account of its little asperities, I advised turning the child, and extracting it by the feet; because the *pelvis* appeared to me spacious enough to give it a passage. This advice,

* I preserve this piece, as uncommon as curious, in my cabinet †.

† When I attended the author's lectures, I saw it, and remarked that some of the teeth were of the second dentition.

adopted

adopted by one of the accoucheurs, after some consideration, and rejected by the other, at length prevailed; but they did not allow me to operate till after they had made a fruitless search for the feet, during more than an hour and an half; frequently withdrawing the hand, and returning it again into the *uterus*. One of these practitioners again insisted on the necessity of the Cesarean operation, when I strenuously asserted my right to operate, and with all that confidence which a certainty of success inspires: it was granted me, not without some difficulty, doubtless from the fear that my attempts would be as useless as the preceding. I introduced my left hand into the *uterus*, and brought down the child's feet in less than two minutes, as well as the *trunk*; after that I used the forceps to extract the head. The operation was neither very long, nor very severe*.

Being

* I was not more than a quarter of an hour in turning the child and extracting it. It has pleased one of the two accoucheurs who sent for me to the woman, to disguise this case in such a manner, that reading it here, and in the work he has just published, any one would suppose they were two different facts†. "The operation," says he, "was excessively labo-

† *M. Lauverjat*, the work already quoted, page 13, and following.

Being totally intent upon delivering the unfortunate woman, who had been in labour more than sixty hours, I did not stop to examine the pretended *exostosis* of the *sacrum*. By seeing the others operate, I concluded the *pelvis* to be larger than I had judged it at first by measuring it only with one finger, and in fact it was so*; for in introducing the hand, they had pushed

“ rious, the head stopped at the superior *strait*, could not clear
 “ it notwithstanding the most violent efforts, and its exit could
 “ not be obtained but by a difficult and repeated application
 “ of the forceps: the child lost its life in it, one of its arms
 “ could not be disengaged without the help of the hook which
 “ terminates the branches of the forceps, &c.” I had silently passed over details which delicacy did not permit me to publish, and still hinders me from publishing: but I cannot avoid denying a part of the assertions in question, which are so many charges against me; though it has not been thought proper to mention my name. The child gave no sign of life after the exit of the first foot, nor indeed at the time the Cesarean operation was most insisted on. When I say, I was not more than a quarter of an hour in turning and extracting the child; I do not include the time lost in useless efforts before I had brought down the first foot, that employed after the exit of that foot, before I was permitted to search for the second, nor lastly, that consumed by *M. de Leürie* in fruitless attempts to take hold of the head with the forceps, after the exit of the *trunk*.

* The *pelvis* of this woman, which I also preserve, has three

pushed away the *tumor* of the *ovarium*, which we did not suspect to be such at that time, so that my hand passed through the canal without any difficulty. The delivery, strictly speaking, as I have just explained it, without being either very long or very laborious, was without success to both mother and child: the latter was dead before I had brought down the feet, and the mother survived it but about fifty hours. She perished, not from the violence used at the time of delivering, but in consequence of what she had suffered before, and of the bad regimen she observed afterwards: I caught her on the third day, drinking a strong decoction of *artemisia*, and she told me she had had no other drink since she was delivered. It was not till the opening of the body that I discovered the feat and singular nature of the tumor in question *.

1966. I shall make only a few remarks on

three inches nine lines in the small diameter of its entrance, and four inches nine lines in the transverse diameter; the inferior *strait* is quite as well formed.

* The body was not opened till the third day after her death; and after having been buried. *M. Lauverjat*, who affirms that the *labia* were gangrened, and the *uterus* ready to become so, did not see the preparations till I presented them to the Royal Academy.

this case, relative to the mode in which the woman might have been delivered, if the nature of the tumor had been known, and if its mobility had been ascertained before it was undertaken. It was not of that kind which can be attacked by an instrument; it could neither be opened nor extirpated, as well on account of its connexion with the neighbouring parts, as of the depth of its situation; but it might have been removed, and carried over the edge of the *iliac fossa* of the same side, as was done without design, in advancing the hand to search for the feet: it might have been kept in that place while the head engaged, or while the forceps had been applied. By proceeding thus from the beginning of the labour, the woman would have been spared a great number of pains, and would without doubt have been rescued from death; as she could live with that tumor, which according to all appearance she had carried several years; so also her child might have been very happily born, with the help of those precautions*.

ARTICLE

* *M. Lauverjat* is still of a different opinion on this point; since he thinks that we cannot give the smallest attention to the case, without regretting that the Cæsarean operation was not performed. In fact, he afterwards justifies the method I preferred,

A R T I C L E II.

*Indications presented by a Deformity of the Pelvis,
relative to Delivery.*

1967. A DEFORMITY of the *pelvis*, considered with respect to delivery, may depend on an irregularity of the bones which constitute that canal, as I have already said; on a fault in their junction; or on certain *exostoses* rising upon their internal surface. It does not always affect the *pelvis* in the same direction, part, or degree: wherefore it is not always equally contrary to the exit of the child. Most frequently the superior *strait* alone is vitiated, and it is pretty constantly from before backward: sometimes also that *strait* is found large enough, and the inferior is contracted. Between the two extremes of this deformity, we observe infinite degrees which I have elsewhere fixed to

preferred, by confessing that he does not propose that operation but when tumors which considerably narrow the entrance of the *pelvis*, can neither be removed or opened. To demonstrate the necessity of such an operation in the case stated, we must prove that the tumor in question was not susceptible of being removed: but I affirm that nothing could be more easy than that removal.

three or four principal ones ; in order to shew their effects more clearly, and cause their indications to be perceived with more justness and precision : I shall recapitulate them here in a few words.

1968. The small diameter of the *pelvis*, considered in the superior or inferior *strait*, may be half an inch less than in the natural state, without causing any great obstacles to delivery, if the child's head does not exceed the most usual size. From three inches and an half in the small diameter, which is the lowest degree of a well formed *pelvis* with respect to delivery, to two inches and a quarter or two inches and an half, which seems to be that where the exit of a child entire, that way, ceases to be possible, we find *pelves* of all the intermediate dimensions. The gradations of deformity which we meet with under the extent of two inches and an half, are not less various ; since there are women in whom the *pelvis* has an opening of no more than ten or twelve lines, and in others still less. Though the latter degrees all prescribe the same indications with respect to delivery, the former leave us in some measure at liberty to choose among different modes of operating.

1969. We

1969. We may refer all the resources of the art, in cases of the deformity of the *pelvis*, to the seven following.

1. The extraction of the child by the feet.
2. By means of the forceps.
3. By the assistance of crotchets and other instruments of that kind.
4. The Cæsarean operation.
5. Premature delivery.
6. Regimen during pregnancy.
7. The section of the *pubes*.

All these resources having been employed with various success, I shall examine them as far as the limits of the work will permit ; but, however, sufficiently to demonstrate their advantages and inconveniences, and determine the cases where they seem admissible.

SECTION I.

A succinct Analysis of Delivery by the Feet; of the Use of the Forceps, Crotchets and Perce-cranes, in Cases of Deformity of the Pelvis.

1970. ALTHOUGH I have already treated of these different methods in a very circumstantial manner, perhaps it will not be displeasing if I recapitulate here their respective advantages and inconveniences, in order to bring into one view, every thing relating to deformities of the *pelvis*.

1971. Though the extraction of the child by the feet is not the most ancient of these methods, as might be supposed, at least, it seems the most natural. If it pass also for the gentlest in the eyes of the vulgar, who dread every kind of instrument, an accoucheur ought to think less advantageously of it. He ought not to be ignorant how difficult it is to turn a child and bring it by the feet, when the waters have been long evacuated. Its death, too often to be feared in such cases, even when the *pelvis* is nearly of the natural size, is so much the more certain as its canal recedes farther from
that

that state, and as its *straits* are more contracted. The extraction of the child by the feet is therefore but a dangerous method when the *pelvis* is vitiated, and only a kind of resource for the mother; often also it is not without great inconveniences to her. Besides, this method is not admissible in all cases of distorted *pelvis*, abstracting the accidents which are inevitably attached to it; since it is impossible to extract the child entire, when the small diameter of that cavity has not about two inches and an half of extent.

1972. The use of the forceps appears a little more gentle in some of these cases; because on one side, it spares the child the fatal effects of the extension and stretching of the spinal marrow, as well as of the luxation of the neck and the head; and on the other, the parts of the woman are less fatigued by it, than by the introduction of the hand to the *fundus* of the *uterus*; but it has also its inconveniences and its limits. This instrument is sometimes dangerous to the child, when the *pelvis* has only three inches in the small diameter, and much more dangerous, if not mortal, when that diameter is still farther contracted: at the same time that it destroys the child, it also exposes
the

the mother to accidents more or less severe. The forceps are no way proper, when the *pelvis* is vitiated in the last degree, that is to say, when its small diameter has not two inches and an half of extent.

1973. The application of crotchets and other instruments destined to open the *cranium*, to discharge the brain and dispose the head to shrink, is still more fatal to the child, than that of the forceps; since death more or less sudden, and always cruel, is the certain consequence of it. Nothing can excuse the practitioner who should use them without being certain that the child is already dead; for that alone can give us a right to prefer these instruments to other methods. If we recollect how difficult it is to obtain that certitude, we shall see with what caution they ought to be employed. The limits also, within which their use should be circumscribed, are not less contracted than those of the two preceding methods. We ought not to employ those instruments, though well assured of the child's death, but when the forceps cannot be applied. They are never exclusively indicated but in those cases where the child cannot pass whole through the *pelvis*; and even then they cease

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to be applicable, when that cavity has but an inch and an half, or even two inches in its little diameter: for the section of the child in the womb might then become as dangerous to the mother, and even more so than the Cefarean operation, to rescue her from which would be the view in performing it.

SECTION II.

A succinct Analysis of the Cefarean Operation.

1974. THE Cefarean operation consists in opening a passage for the child, through the *parietes* of the *abdomen* and the substance of the *uterus*: with respect to the child, it is the gentlest and most certain of all the methods we can employ for terminating the labour. It may be a victim to the violence and length of the labour when it is what we call natural; it often incurs the same danger when we extract it by the feet; its life is not secured from all risk in the use of the forceps; lastly, its death, almost always certain when we apply the crotchet, is inevitable when we open the *cra-*
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nium to discharge the brain from it. We may always secure it from this accident by the Cefarean operation; because we can render its exit as quick as easy, by giving a little greater extent to the way the instrument prepares for it.

1975. If we had no other view but the preservation of the child, we should therefore prefer this method to the others, whenever there is reason to fear any obstacles to delivery by the usual passage; but the mother having the same right to life, and this operation being generally fatal to her, whatever care we take to assure its success, it ought not to be practised but when evidently necessary, and when delivery cannot be performed otherwise. If nothing but the death of the child can authorize us to dismember it in the womb of its mother, when it cannot be extracted entire; so also, its life alone can justify the Cefarean operation, in the same case. I however except that where the *pelvis* is contracted in the highest degree, that is to say, where its small diameter is under two inches: for then there is no other resource to deliver the woman, but the Cefarean operation. It is unfortunate when her child is dead, to have nothing to present her but a corps, for
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the reward of her resignation, and the sacrifice which she in some measure makes of her own life. Though she runs an exceeding great risk of losing it in consequence of the Cesarean operation, she would be much less sure of preserving it, if she were not delivered in that manner; as we shall see in the article which treats of the rupture of the *uterus*, and of *extra-uterine* pregnancies.

1976. The consequences of the Cesarean operation have almost always been so formidable, that many accoucheurs of the last age, and even of the present, have not dared to perform it. *Mauriceau*, who in his time was the oracle of the science, as *M. Levret* was in ours, recommended waiting for the woman's death to open the body, and treated as fabulous the account of the Cesarean operations which were then said to have been performed with success. But by thus exposing the mother, we should often have to reproach ourselves with having suffered both to perish; for in those cases her death hardly ever happens before that of the child.

1977. The authority of *Mauriceau* cannot be received as a law among us, as in his own time. That operation has not only been performed

formed with success, and several times on the same woman, if all the observations which have been transmitted to us are true, but we also remark that some of those who have undergone it, have suffered no other accidents in consequence, than what are usual in large simple wounds penetrating the *abdomen*; and which are even looked upon as necessary for their reunion. Such observations as these have made some practitioners believe that the danger of the Cesarean operation did not essentially depend on the injury done to the parts concerned in it, but on the morbid state in which those parts, and the woman also, were at the time of the operation.

1978. It is very certain that the low and exhausted state which succeeds a long and severe labour, as well as the *erethismos* and inflammatory state of the *uterus*, may increase the accidents annexed to the Cesarean operation, as much and perhaps more than the manner in which it is performed. But the unfortunate consequences which it has almost always had, did not proceed from those sources only, since the fate of those women who have had it performed by the most skilful surgeons, after convenient preparations and at the most favourable

favourable time, has not been very different from that of others who have suffered it from people without experience, and even absolutely strangers to the art. We shall therefore never be able to prevent or avoid every thing which may render the success of such an operation uncertain.

1979. Two sorts of hemorrhages are to be feared in the Cæsarean operation, if we consider them relatively to their source: one comes from the sinuous vessels of the *uterus* which terminate in the *placenta*, and the other from the section of the principal branches of the *uterine* arteries and veins which are found near the lateral parts of that *viscus*. We may prevent the latter by operating at the middle of the belly, and opening the *uterus* at its anterior part; but it is not so with the former; that may happen during the operation, if we should cut the *uterus* at the part where the *placenta* is engrafted, which we cannot always avoid; or it may supervene some time afterwards, though the incision have been made far from that part. In the latter case it is the effect of an atony of the *uterus*, like the hemorrhage which sometimes succeeds a natural labour. In the other, it manifests itself immediately, because it proceeds

ceeds from the section of the *sinuses* and other uterine vessels, and the woman may lose a great deal of blood before the operation be finished ; as I observed in one of the two cases that I shall relate.

1980. An hemorrhage is not the accident most frequently observed after the Cesarean operation : an inflammation of the *uterus* and of the other *viscera* of the *abdomen*, fever, supuration, a discharge of the *lochia*, either *sanguine*, *purulent* or *lacteal*, into the abdominal cavity, accompany it much more frequently ; and when the woman has the good fortune to escape from so many perils, she almost always finds herself exposed to considerable hernias, very difficult to manage, but which might easily be prevented by means of a proper bandage.

1981. Since the Cesarean operation is so dangerous to the woman, that scarcely one in ten survives it, it ought not to be undertaken but in cases where it is evidently indispensable : but that is what accoucheurs have determined in a very vague and uncertain manner, with respect to a deformity of the *pelvis*. We ought not to perform it but when that misconformation is such as to leave no hope of bringing the
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child alive by the natural passage : but we must not adopt for a certain rule on this subject, what the celebrated *Levret* has laid down. “ To decide absolutely,” says he, “ on the impossibility of delivering the child alive, the accoucheur must not be able to introduce his hand through the *pelvis* to penetrate into the *uterus* ; or cannot withdraw it when he has taken hold of one of the child’s feet.” It would be extremely dangerous to have no other rules but these, to decide on the impossibility of delivery, and the necessity of the Cesarean operation. No one will deny that that operation is really indicated when the hand cannot pass through the *pelvis* of the woman ; but it would be an absurdity to maintain that it is never truly necessary except in that case. The largest hand easily passes through a *pelvis* whose entrance has but two inches and an half in the small diameter, if it be directed methodically ; and a smaller may also easily penetrate into the *uterus*, though that diameter should be but two inches : nevertheless, if we were to attempt to extract ten thousand children through such a passage, we should certainly sacrifice every one of them, if they were at full time, and of the usual size. A *pelvis* of two inches three quar-

ters diameter, leaves us so little hope, that of five hundred children we should scarcely save one or two; and even then we should be indebted for it to that particular constitution mentioned in paragraph 95, but which unfortunately is too rare in these cases.

1982. Without endeavouring to carry the hand into the *uterus* (which ought to be carefully avoided in cases which require the Cæsean operation), in order to ascertain whether it will pass through the *pelvis* freely or not, with one of the child's feet, as the passage from *M. Levret* seems to insinuate, we may determine the cases where the operation becomes actually necessary; because we may with the finger alone, or with any kind of *pelvi-meter**, measure the extent of the small diameter of the *strait*, within a line or two. See par. 123 and following, to par. 137 inclusively. I am of opinion that it is perfectly indicated, whenever the extent of the diameter is not more than two inches and an half.

* A kind of compasses for measuring the diameters of the *pelvis*.

SECTION III.

Of premature Delivery, proposed on account of a Deformity of the Pelvis, with a View of avoiding the Cesarean Operation.

1983. SOME examples of children born at the eighth or at the seventh month of pregnancy, and even sooner, with a constitution strong enough to complete their development like those born at the natural period, and to live as long, have suggested the idea of premature delivery as a salutary resource for those whose birth would be impossible at the period of nine months, on account of a deformity of the *pelvis*, without having recourse to the Cesarean operation. Although it might suffice to object to its partisans the little success they have experienced from it in such cases, I shall nevertheless examine whether there be any parity between a premature delivery which takes place naturally in all respects, and one brought on by art at the same period of pregnancy.

1984. Without entering into the interest which many persons have had to make children

born at full time pass for those of seven months, I shall remark that most women are never sufficiently sure of the time when they became pregnant, for us to lay down any thing very certain concerning the epoch of delivery from their account. In the same manner as some women have thought they went ten and even eleven months, because a suppression of the menses and slight indispositions had in them preceded conception; other women have imagined they were delivered at seven months, because they had been regular in the two first, and because the circumstances which they look upon as so many proofs of the existence of pregnancy, had not manifested themselves till the suppression of the menstrual evacuation.

1985. The neck of the *uterus*, in women whose labour comes on naturally at seven or eight months, develops much earlier than in those who go the usual time. The pains begin without being brought on by any apparent cause; they are not the effect of a want of expansion in the *uterine* fibres, nor of the accidental irritation which results from it; but of the want of an equilibrium between the fibres which constitute the neck of the *uterus*, or the resistance which they oppose, and the action of the
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the other parts of that *viscus*, which press the produce of conception downward ; as is generally observed at the period of nine months. See par. 200 and following, to par. 206 inclusively ; as well as par. 584 and 585. Those pains continue and succeed each other, as in a labour of full time ; their gradation is the same, and their effects manifest themselves in the same order. From the premature development of the neck of the *uterus*, I have several times predicted to my pupils, as early as the fourth month of pregnancy, that labour would come on naturally in the fifth ; at other times, at that epoch, that it would terminate at six months, &c. and the event has always confirmed my judgment.

1986. We hardly ever meet with those favourable dispositions at the period of seven or eight months, in women who have the *pelvis* so deformed as to render delivery impossible at the period of nine, and consequently in whom it seems that it might be advantageous to force it to come on prematurely. The neck of the *uterus* at seven months has seldom begun to open ; it is still very thick and very firm. The pains, or the contractions of that *viscus*, cannot then be procured but by a mechanical irrita-

tion pretty strong and long continued; but those pains being contrary to the intentions of Nature, often cease the instant we leave off exciting them in that manner. If we break the membranes before the orifice of the *uterus* be sufficiently open for the passage of the child, and the action of that *viscus* strong enough to expel it, the pains will go off in the same manner for a time, and the labour afterwards will be very long and very fatiguing; the child, deprived of the waters which protected it from the action of the *uterus*, being then immediately pressed by that organ, will be a victim to its action before things be favourably disposed for its exit, and the fruit of so much labour and anxiety will be lost.

1987. Premature delivery, obtained in this manner, is always so unfavourable to the child, that I think it ought never to be permitted except in those cases of violent hemorrhage which leave no chance for the woman's life, without deliverance: the nature of the accident also disposes the parts properly for it. Supposing it be admitted in cases of deformity of the *pelvis*, in order to dispense with the Cæsarean operation at the time of the child's maturity, as some have recommended, should it be at
seven

seven or at eight months that we ought to solicit it ?

1988. To consider this resource, if premature delivery can be regarded as such, only with respect to the advantages it may procure to the child, we ought to recur to it as late as possible ; for it is, in general, so much the stronger, and so much the more *viable* as its birth approaches nearer to the period assigned it by Nature : it should therefore rather be at the eighth month than at seven. But if we examine it in another point of view equally essential, it ought to be brought on sooner or later, according to the degree of narrowness or deformity in the woman's *pelvis* ; for that deformity may be such, as to give as much obstruction to the exit of a child of seven months, in some women, as to one of eight in others. Premature delivery, if we were always to solicit it at the same period, might be as long, as laborious, as fruitless, and even as impossible, in some cases, as if we had not undertaken to deliver the woman till the ninth month. The following cases will prove the truth of this observation.

1989. A woman whose two first children had been victims to the efforts of labour, on account

of the deformity of the *pelvis*, had a fall in the eighth month of her third pregnancy, which at first I looked upon as a fortunate accident; because it immediately occasioned a discharge of the waters, and a few hours afterwards pains strong and frequent enough to give hopes of a speedy deliverance: but I was disappointed. Having waited twelve hours, and then seeing that the child's head, though well situated, and besides much smaller than those of the two former, was not at all advanced, notwithstanding the strength of the pains and the violence of the woman's efforts, I determined to extract it with the forceps. I found as much difficulty in it as in the preceding labours, and the fate of the child was the same as that of the others. But how much more difficulty should I have found, if the *pelvis* of this woman, which had, according to the estimation I made of it, two inches three quarters in the small diameter, had had no more than two inches, or even less, like several which I have by me?

1990. Another woman, on whom the Cæsarean operation had been successfully performed in her first pregnancy, was delivered four times since, but at most, not later than at seven months; and though the children were small
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for the time, the labours were always very long and severe. In the third of them she was delivered in my theatre, in presence of forty-five pupils at least, after a brisk labour of more than fifteen hours: the woman thought herself at full time, because her *menfes* had been suppressed more than nine months. I predicted her labour some days before, and I added that she was at most in the seventh month of her pregnancy, and the event soon proved it to be true. The child, when born, weighed no more than two pounds eight ounces and an half; the diameter of its head was but two inches eight lines from one *parietal protuberance* to the other, that is to say, in its greatest thickness; but restored to its natural state, for at the moment of its exit it was depressed on one side, at the part which had lain against the projection of the *sacrum*, two lines at least. The child lived but two days and an half; I keep the skeleton of it in my cabinet. The fourth labour was still longer, though the child was as small: this last died almost as soon as born*.

* These observations ought to justify *M. Millot* in the eyes of those who have accused him of having performed the Cæsarean operation on this woman without necessity.

1991. Such are the fruits to be expected from premature delivery, when Nature has set some bounds to the deformity of the *pelvis*: what can be hoped from it, when the diameter of the entrance of that cavity is no more than twelve or fourteen lines, as in a *pelvis* in my collection, or when it is still narrower.

S E C T I O N IV.

Of Regimen, considered as a Means of preventing the Difficulties of Labour, which proceed from a Deformity of the Pelvis.

1992. If the bigness of the child were in proportion to the quantity and quality of the aliment taken by the woman during her pregnancy, as the vulgar think, the regimen which some have recommended to make her observe, with a view of moderating or limiting the growth of her child, would be very laudable in some cases; but we see the contrary too often. Women nourished in the bosom of plenty, and who, in the variety of aliments which the easiness of their fortune procures them,

them, can scarcely find enough to satisfy themselves, have children very small and extremely delicate ; while others exhausted by disease, or by being compelled to live on the most rigorous diet, often have children very large and strong. I have succoured some consumed by a *marasmus*, and scarcely able to breathe, who have produced children of nine to ten pounds ; others have grown strong and lusty, and increased their weight thirty or five and thirty pounds, though their children weighed no more than six or six pounds and a half.

1993. Besides, the little difference presented by the bony frame in a great number of children at full time, evidently shews that any regimen observed by the mother, even if it could moderate their growth, would be of no use, except to those who have to pass through a *pelvis* but little deformed and whose dimensions are nearly in the natural state. Whatever influence the regimen of the pregnant woman may have on the development of her child, it cannot be reckoned among the resources of our art, in cases of extreme deformity of the *pelvis*.

ARTICLE III.

Of the Section of the Pubes.

1994. THE use of crotchets and other instruments of that kind being always dangerous and destructive to the child, and the accidents attending the Cefarean operation having carried off the greater part of the women who have undergone it, accoucheurs have in all ages been led to seek a method which might dispense us from recurring to those fatal resources. Sensible men were already tired of the search, seeing that their efforts were useless, and contented themselves with pitying the destiny of those women and children whom they could not spare, when a student in surgery * conceived the project of enlarging the canal of the *pelvis*, by separating the *ossa pubis*, by means of the section of their *symphysis*. Although the decision of the Royal Academy of Surgery, to whom the project was then submitted, was not favourable to it, its author nevertheless put it in practice some

* *M. Sigault*, since physician of the Faculty of *Paris*.

years afterwards : the title which he had lately acquired in the Faculty of Medicine appearing to him to give him a right to undertake a new operation, which had few partisans and many adversaries.

1995. *M. Sigault* is not the first who had conceived the idea of enlarging the woman's *pelvis* with a view of rendering it accessible to the *fœtus* ; *Severin Pineau* had recommended it near two hundred years before him, being of opinion that the orifice of the *uterus* and the external parts would dilate in vain, if the *ossa pubis* did not also separate to give the child a passage. But he proposed nothing to favour that separation, except baths, emollient lotions, and the application of fat and mucilaginous substances ; because he thought, to relax the *symphysis* of those bones would be sufficient to procure their separation : but *M. Sigault* thought it more expedient to cut the knot than untie it. He would have been in the right, if the separation of the *ossa pubis* were as necessary for delivery, as even the adversaries of his new operation have published ; because the section of their *symphysis* would be the only means of obtaining it. *M. Sigault* only followed the impulse given him by reading *Severin Pineau*
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and other authors, partisans of the same opinion; as he himself says *. According to that, it would appear very astonishing, that two ages should have passed away since *Severin Pineau* without any person's having dared to cut the *symphysis* in question, if we were not to suppose, that those who exercised the art of midwifery were sufficiently enlightened to have perceived the inutility and danger of such an operation, in cases of extreme defect of the *pelvis*.

1996. *Severin Pineau* had not only conceived the idea of enlarging the *pelvis*, as I have just said, but also that of cutting the *symphysis* of the *pubes* with advantage: at least it may be inferred from a passage of his work which I shall quote. After speaking of the precautions which Nature seems to have taken in the construction of the head of the *fœtus*, to favour delivery, he adds that her work is much more admirable in the separation of the bones of the mother's *pelvis*; that those parts may not only dilate, but may also be safely cut. *Si enim natura ossa capitis non perfecerit in utero, neque futuras ullas his effinxerit, ut deflexis ossibus & ut cumque*

* See the thesis of that physician, maintained in the schools of *Angers* in 1773.

*compresso capite fœtus in enixu facilius expellantur utero, exeantque foras : quanto magis in dilatandis maternis ossibus sagax & provida eadem erit, contra eorum opinionem qui ista ossa dilatari negant. Præterea ignobiliores partes nobilioribus semper ministrant & obsequuntur, nec non continentes seu externæ, non tantum dilatari, sed etiam secari tutò possunt, ut internis succuratur ut Galenus ait. At nemo sanè est mediocriter in medicinâ versatus, qui non noverit pueros in utero contentos multo nobiliores esse maternis ossibus, pelvim, ut vulgo loquimur, constituentibus *.*

1997. If we may perceive in this passage of *Pineau* the idea of the section of the pubes, at least we cannot refuse the physician of Paris the honour of explaining it more fully, and of having first executed it †. At that time almost the only advocate for this new operation, the success he obtained from it in the case of the woman *Souchot* procured it a great number of

* *Severin Pineau*, cap. x. Opuscul. & Physiolog. & Anatom. lib. ii.

† *M. Alph. le Roy*, D. M. P. has nevertheless published that a French physician had performed it at *Warsaw* in the last age. See his pamphlet, intitled, *An Examination of M. B.'s System of Midwifery*. Ext. de la Gazette de santé année 1781.

partisans*, who eagerly sought opportunities of performing it; but the greater part met with very different success. *M. Sigault* himself has several times since experienced how little this resource is to be depended on for both mother and child when the *pelvis* is exceedingly deformed †.

1998. *M. Sigault* at first proposed this operation only for those very rare cases, where the deformity of the *pelvis* leaves no other resource but the Cæsarean operation; but having, as I may say, from the very first trial exceeded the

* No discovery in the art of healing was ever more universally received than the section of the *pubes*; it had almost as many partisans as there were individuals acquainted with it; a great number of physicians and surgeons, as well in France as elsewhere, declared in its favour; scarcely was it practised the first time, even before the event of it could be well known, when all Europe resounded with the name of its author; the faculty of *Paris* caused a medal to be struck in honour of him, and government granted him a pension, as well as the woman on whom it had just been performed. On one side of the medal is the image of the dean of the faculty, and on the other the following inscription: *Section symphise. off. pub. lucina nova, ann. 1768, invenit proposuit, 1777, fecit feliciter. J. R. Sigault. D. M. P. Juvit Alph. le Roy, D. M. P.*

† See the observations of the author, which I shall briefly state in the sequel of this article.

strict limits within which he had circumscribed it, its partisans set no bounds to it at all, and both he and they were seen to practise it on women who had formerly been delivered by the efforts of Nature alone, or who have been so since. Some substituted it to that patience with which they ought to have been endued, and others to the methodical application of the fingers; these to the extraction of the child by the feet, and those to the use of the forceps or crotchets. From that time, they all met with nothing but insurmountable obstacles to delivery, and could find no resources but in the section of the *pubes*; for it was performed more times in the space of four or five years, than the Cæsarean operation had been in the course of twenty or thirty, or perhaps in half an age; lastly, as long as the delirium continued, it seemed that the whole art of midwifery was reduced to a dexterity in performing this operation; they also ventured to publish that the operation itself was a trifle, and that every thing depended on the subsequent treatment.

1999. Although time has at length performed what the numerous writings which appeared from the very first against this operation could not, and though, since truth has

obtained a hearing amidst the clamours of prejudice, it has been performed much seldomer than before, I shall nevertheless spend some time in examining it, and shall add some things to what I have said of it in the first edition; because the number of its followers is still too great, and because the greater part of them cannot obtain a knowledge of those facts which would dissipate their error, or at least inspire them with that fear which *M. Sigault* seemed to have of it in the latter years of his life *.

2000. I shall follow the same mode of analysis as in the first edition, though many new cases might now be collected to support our opinion of this new operation. The end proposed by its author being to augment the capacity of the *pelvis*, in all cases of deformity, so as to give a free passage to the *fœtus*, and especially in that circumstance where the Cæsarean

* The confidence of *M. Sigault* in this new method was so diminished in the latter periods, that he declined performing it when the *pelvis* had not at least two inches and an half in the small diameter of its entrance. He proposed the Cæsarean operation for a woman on whom I performed it in his presence in the month of July 1785; and a few days before his death, for another whose *pelvis* had at least two inches and an half from *pubes* to *sacrum*. See also his observation concerning the woman *Vespres*.

operation was exclusively indicated, I shall first endeavour to shew what amplification that canal can acquire from it, according to repeated experiments on the dead body ; then whether the result of the numerous cases which I have collected, is different from what those experiments indicated ; and lastly, whether the section of the *pubes* can, not only instantly procure that degree of opening in the *pelvis* necessary for delivery, but also whether the execution of it is as easy, and its consequences as simple, as has been published.

S E C T I O N I.

Experiments which indicated the Degree of Opening that the Section of the Symphysis of the Offa Pubis must give to the Pelvis, and the Accidents which must follow that Operation on the living Woman.

2001. WRITINGS concerning the section of the *pubes*, both for and against it, have been so multiplied that they compose many volumes, and it seems as if nothing more could be said

on it. I had endeavoured, in a thesis maintained in the schools of surgery in 1776, to destroy the advantageous opinion which some persons already had of it at a time when its author had not yet dared to practise it *. After having combated the opinion of the ancients adopted by the greater part of the moderns, upon the spontaneous separation of the bones of the *pelvis* in labour whether natural or preternatural, and having demonstrated the inutility of that separation in well formed women, its insufficiency in those who have the *pelvis* vitiated, and its inconveniences in both, I endeavoured to prove that the separation to be obtained from the section of the *symphysis*, which *M. Sigault* seemed then to estimate at twelve or fifteen lines at most, could not render the *pelvis* spacious enough for the passage of the child, when its deformity required the Cæsarean operation exclusively.

2002. I drew no parallel between those two operations with respect to the accidents that accompany them, because experience had not

* The title of this thesis is: *An in partu, propter angustiam pelvis, impossibili symphysis ossium pubis secanda?* 1776: it was on the 5th of November, eleven months before the woman *Souchot* underwent this new operation.

then demonstrated those of which the section of the *pubes* was susceptible. I thought it sufficient to shew that that new method could not open a passage large and free enough to put the child's life out of danger, and that of all the accidents which seemed to be the necessary consequence of it, that was the greatest, since the end proposed by it was to preserve the child, without endangering the life of the mother. Experience soon confirmed my opinion; every trial that was made of this new method having as I may say had its victim.

2003. *M. Sigault* knew not at the time he performed the operation on *Souchot*, how much the *ossa pubis* could recede from each other after the section of their *symphysis*; at least it does not appear that he then knew it; the experiments which he had made on the dead body, before he maintained his *thesis* in the medical schools of *Angers*, having only shewn him a separation of an inch and a few lines*. As it was on this trifling effect that he founded

* *Quo facto*, says he (*symphyse secta*), *ossa pubis subito plusquam pollice à se invicem recedunt, tuncque foetus naturæ artisque viribus sollicitatus per canalem ampliatum in lucem incolumis educetur*. Thesis maintained in the schools of *Angers*, in 1773.

all the advantages of his new method and the preference which it seemed to him to merit over the Cefarean operation, I limited the separation of the bones to the same degree in my first experiments, and it was also from the little increase that the diameters of the *pelvis* received from it, that I pronounced against this operation, and concluded that it could not be substituted for the Cefarean.

2004. It has since been published, that a separation of two inches and an half might constantly be obtained, without force or danger; and it is even said that it has been found to extend to that degree in the greater part of the women in whom the *symphysis* of the *pubes* has been cut. *M. Alphonse le Roy*, who first announced this degree of separation, maintained a short time afterwards that he had carried it six lines farther, in two women on whom he had performed it with success *. But fresh experiments, the result of which has been but too well confirmed, by the actual section of the *symphysis* in the living subject, have shewn us at

* Observations & Réflexions sur l'Opération de la Symphyse & les Accouchemens Laborieux, *M. Alph. le Roy*, Médecin de *Paris*.

what price it can be carried even to two inches.

2005. At the time when the public papers every day proclaimed fresh instances of the success of this operation, an epidemical disease which robbed society of great numbers of those women whom poverty obliges to be delivered in the hospitals, procured frequent opportunities of repeating the same experiments, especially at the *Hotel-Dieu* at *Paris*, and every one eagerly communicated the result of them to the Royal Academy of Surgery: that result having been pretty constantly the same, I shall only mention a few of them.

2006. The subject being placed on a table, the thighs moderately separated by two assistants, the *ossa pubis* receded from each other from three to six lines, the instant the section was made. It was not without carrying the thighs forcibly outwards so as to make them in several of the women describe right angles with the *trunk*, or the form of the letter T, that we could obtain a separation of two inches and an half; and even then we were obliged to pull the hips in the same direction as the inferior extremities. That separation was not effected in any one instance without tearing the

sacro-iliac symphyses, and that tearing, which began sooner or later, was more or less considerable, according to the particular form of the *pelvis* on which we operated, and as the *symphyses* themselves were more or less supple.

2007. In a *pelvis* whose superior *strait* had but three inches and a quarter in the small diameter, and five inches transversely, the *ossa pubis* were scarcely separated an inch, before one of the *sacro-iliac symphyses* appeared open a line and an half, and the other only a line. The separation of the former augmented to five lines, and that of the latter to three and an half; the *periosteum* detached itself from them to a considerable distance, and their anterior ligaments were torn long before the *ossa pubis* were separated two inches and an half. In another experiment on a *pelvis* of four inches seven lines in the small diameter, and four inches three quarters in the other direction, the *ossa pubis* could not be separated twenty-one lines without detaching the *periosteum* from the *sacro-iliac symphyses*, and tearing it an inch before them. The *symphyses* themselves were open so far as to admit the end of the finger, and in the sequel separated so as to receive the end of the thumb with ease.

2008. I have also remarked in these experiments, repeated on a great number of bodies, that the *ossa pubis* rarely receded in an equal degree; which gave a different amplification to the two sides of the *pelvis*, considered from the center of the projection of the *sacrum* to the angle of each of those bones. It is also for that reason that the *sacro-iliac symphyses* were not always equally torn. The difference which I have observed between the recession of one bone and that of the other, was from two lines to seven.

2009. The external wound, which was two inches and an half, was torn in all these cases, as well at its superior as inferior angle; and sometimes to the extent of several fingers' breadth.

2010. The augmentation in the diameters of the *pelvis* was not the same in all these experiments, though the separation of the *ossa pubis* was carried to two inches and an half; it appeared different according to the original form of the *straits*, according to the respective extent of their diameters, and the distance which each *os pubis* had receded from the center.

2011. In the first *pelvis*, mentioned in par.

2007,

2007, the natural distance from the angle of the right *os pubis* to the center of the projection of the *sacrum*, augmented five lines and an half; that from the left *os pubis* two lines only; while the transverse diameter became ten lines longer. In the second *pelvis*, the angle of each *os pubis* increased its distance from the center of the projection of the *sacrum* five lines, and the increase in the transverse diameter was the same as in the first. I have observed nearly the same thing in all the experiments I have made.

2012. The transverse diameter of the inferior *strait* augmented much more than that of the superior; and the top of the arch of the *pubes* was almost always enlarged in the same proportion in which the bones were separated.

2013. The internal form of the *pelvis* being the same every where, except some slight modifications, and being subject to the same alterations in all women, whatever country they may inhabit, those who like me have endeavoured to determine the produce of the section of the *symphysis* of the *pubes*, must have met with the same result. We observe in the experiments of *M. Rippling*, made in the *Hôtel-Dieu* of *Paris*, at the time he attended my lectures

tures on midwifery, that a separation of an inch between the *ossa pubis*, gave but a line and a half more in the small diameter of the superior *strait*; that in another case, the separation was carried nine lines farther to obtain the same quantity; while an opening of no more than six lines in a third *pelvis* produced as much, and in another a separation of two inches and a quarter gave no more than three lines and an half. *M. Serin*, surgeon-accoucheur of *Strasbourg*, also found an increase of but three lines in the direction of the small diameter of the superior *strait*, though he had gradually carried the separation of the *ossa pubis* to two inches and a quarter; and three inches on the same *pelvis* produced no more than six lines. *M. Chevreul* procured no more than two lines, from a separation of two inches, and when he carried it to three inches, he obtained no more*; while two inches eight lines produced, under the inspection of *M. Desgranges*†, six lines and an half or seven lines: in the latter case, the *pelvis* had originally but two inches two lines in the diameter from *pubes* to

* *M. Chevreul*, surgeon at *Angers*: experiments communicated to the Royal Academy of Surgery.

† A surgeon of reputation of the College of *Lyon*.

sacrum,

sacrum, &c. &c. All these authors also mention the injury, and tearing of the *sacro-iliac symphyses*, although some of their experiments were made immediately after the death of the subject, and on œdematous women, or who had been just delivered by means of the Cæsarean operation.

2014. Excepting this injury to the *sacro-iliac symphyses*, the partisans of the section of the *pubes* have acknowledged and admitted the results I have just stated; though they ought not to appear sufficient for the greater part of the cases in which they thought this operation recommendable. “The *ossa pubis*,” says *M. le Roy*, “carry themselves so much the farther forward, as they are more separated from each other after the section of their *symphysis*. At an opening of an inch, they diverge forward two lines; at two inches, according to the observations of *M. Lauerjat*, they diverge to five lines; and at two inches and an half, they advance forward eight lines; . . . they would diverge forward an inch at least, if the separation were carried to three inches *.”

* Rech. Hist. & Pratiq. sur la Sect. de la Symph. du Pub. pag. 71 & 72.

2015. It appears clearly, from the result of so many experiments, that the small diameter of the superior *strait*, which is that which usually obstructs delivery, cannot increase more than from four to six lines, by means of a separation of the *ossa pubis* to two inches and an half; which cannot take away the disproportion which exists between that diameter and that which the child's head must present to it; even if we could without inconvenience obtain a separation of two inches and an half on the living woman. *Deventer* and *Roederer* both announced this important truth, which experience has so many times confirmed since the discovery of *M. Sigault*. It is not from a separation of the *ossa pubis*, says the former, that we can expect the amplification necessary for delivery, but from the retrocession of the *sacrum*, either the whole of it, or a part*: *Roederer* adds, that the separation of the *ossa pubis* can only augment the transverse diameter of the *pelvis* †.

2016. Some of the partisans of the section

* *Deventer*, Novum Lumen Exhib. Obstet. pag. 18.

† *Roederer*, Element. Obstet. § 28, pag. 8.

of the *pubes*, object that the experiments which have given this result cannot exactly demonstrate the product of a separation of two inches and an half in the living woman and on deformed *pelves*, whether we consider it with respect to the amplification of the canal, or the injury to the *sacro-iliac symphyses*; because they were made on the dead body, and almost all on *pelves* of the natural size and well formed. A fatal example, which happened a short time afterwards, ought to have convinced them that the *symphyses* in question are not exempt from rupture in the living woman, and that the operation which they have so much extolled, cannot render a very defective *pelvis* large enough to give a free passage to the child: since pretty nearly the same effects were found on the woman *Vespres*, in whom the *ossa pubis* were separated only eighteen lines, as were remarked in the dead bodies which served for those experiments. Either through mistake, or moderation, it was stated in the detail of the examination of that woman after her death, that the posterior *symphyses* were unhurt, that the *periosteum* only was detached from them to the extent of seven lines, and the bones were not dis-

united.

united *. Those *symphyfes* already manifestly injured, though the separation of the *ossa pubis* was but eighteen lines, would they have remained *unhurt*, if those same bones had been separated from each other two inches and an half † ?

2017. The product of the section of the *pubes*, considered in the direction of the small diameter of the superior *strait*, must be so much the greater, according to the opinion of the most zealous defenders of that operation, as that *strait* shall be more contracted in that direction : which is generally true. But is the question here to determine a geometrical product with the most exact precision ? Is it not relatively to the surplus of the volume of the child's head which cannot pass the *straits* of its mother's *pelvis*, that we ought to consider the product of the section of the *pubes* ; and on that relative product that the advantages of this new operation must be established ?

* See the remarks of *M. Lauverjat*, concerning this operation, entitled : Examen d'une Brochure qui a pour Titre, Procès Verbaux & Reflexions à l'Occasion de la Section de la Symphyse, &c.

* I shall in the sequel adduce many other cases in support of that of the woman *Vespres*.

Let

Let us admit that the small diameter of the superior *strait* augments eight lines in a *pelvis* where it was originally but an inch and an half, instead of an amplification of four or five lines which a similar separation gives it in a *pelvis* of three inches, which is about the middle degree of bad conformation, what conclusion can we deduce from it? Which of those two *pelves* would become fittest for delivery? Would it be the first, because it had augmented eight lines from *pubes* to *sacrum*, or that which had obtained but four or five lines? Granting to the partisans of the opinion which I contest, that the increase in the small diameter of the superior *strait* is so much the greater after the section of the *pubes*, as that diameter was originally shorter, they would still be forced to confess that this operation would be so much the farther from procuring the dimensions necessary for delivery, as the *pelvis* should be more deficient in those dimensions. A single example will suffice to put this truth out of doubt.

2018. Let us suppose a *pelvis*, the small diameter of whose entrance is only fourteen or fifteen lines, as represented in my sixteenth plate, and admit that by means of a separation
of

of two inches and an half, the angles of the *ossa pubis* may recede nine lines farther than their natural distance from the projection of the *sacrum*, as is seen in the same plate; admit even that the small diameter of that *pelvis*, prolonged by the separation of the *ossa pubis*, to the degree at which it is asserted the child's head has engaged, increases an inch instead of seven or eight lines *, what proportion will then exist between that diameter and the smallest the head can present to it? If we allow the latter the usual thickness, which is about three inches and an half, it is evident that the defect of proportion will still be sixteen lines after the section of the *pubes* and the separation of the bones: that is to say, that the smallest diameter of the head will still so far surpass the small diameter of the *pelvis*. What would be the fruit of this operation in such a case? What would be the consequences of it in a *pelvis* much narrower still, since such exist? The authors of this operation prove clearly, in their way, that a separation of two inches and an half must give the *pelvis* all the amplitude necessary for the passage of the child,

* See the explanation of the sixteenth plate.

when the diameter is defective only twelve or fourteen lines.

2019. In the delivery of the woman *Souchot*, one of the sides of the head engaged in the separation of the *ossa pubis* so far as to appear without, if we credit the relation of *M. Sigault's* friend; in the woman *du Belloy*, on whom the operation was performed the 24th July, 1779, it was the *occiput* which *M. le Roy* says he brought down between them: but he did nothing of that kind in *Julia Collet* *, though the child's head was much larger, and the separation of the *ossa pubis* not so great as in the latter woman. Supposing that a part of the head may really engage between the *ossa pubis*, it can be at most but a few lines, and it is by allowing that, though nothing is less certain, that I have supposed an augmentation of an inch in the small diameter of the *pelvis* stated for an example in the preceding paragraph.

* The operation on this woman was also performed by *M. le Roy*, seven days before that on *du Belloy*.

SECTION II.

Principal Source of the favourable Opinion which has been too hastily adopted concerning the Section of the Pubes ; and of the Error of its Partisans.

2020. THE end proposed in the section of the *symphysis* of the *pubes* being to render the deformed *pelvis* spacious enough to give a free passage to the child, we ought not to expect that advantage but from the increase of those diameters which want the necessary length. It is generally only one of the diameters of the *pelvis* which is defective, and almost always that of the superior *strait* which goes from the *pubes* to the projection of the *sacrum*. It is not the internal *contour* of the deformed *pelvis* that requires augmentation, but that diameter only. In most cases, it would be necessary to augment the defective diameter of the whole length of the separation of the *ossa pubis*, to remedy the disproportion which opposes delivery : even then, an augmentation of two inches and an half would not be always sufficient ; since there are *pelves* which have only

'fourteen lines' in the small diameter, others only ten, and even six. What will be the consequence then in all these cases, if that diameter, instead of augmenting two inches and an half, should receive but a sixth or seventh part of that increase, and if the rest of the product of the separation of the *ossa pubis* should go to those diameters which are already too great, or at least sufficiently large?

2021. It is not the circumference, or the internal *contour* of the ellipsis formed by the superior *strait* when too narrow from before backward, which is too small relatively to delivery, in the greater part of deformed *pelves*, even in those which appear the most irregular. A *pelvis* which has but an inch and a quarter in the small diameter of its entrance, and five inches from side to side, like that represented in the sixteenth plate, would be almost as large as is necessary for delivery, if its irregular form could be changed and made round: for, strictly speaking, an opening of ten inches and an half or eleven inches in circumference, is sufficient for the passage of a child's head of the usual size. But in such a *pelvis*, the diameter which goes from *pubes* to *sacrum* must be enlarged two inches four lines superiorly, to be

as large as that of the head of the *fœtus*, which is commonly estimated at three inches and an half.

2022. It is either an ignorance of these truths, or contempt of them, which has deceived the greater part of the partisans of the section of the *pubes*. Dazzled by appearances, they imagined that a separation of two inches and an half would remove a like disproportion between the small diameter of the *pelvis* and that of the child's head; and that a smaller separation would lead to the same end, when the *strait* is less contracted. The slightest notions of geometry would have cleared the mist from their eyes, and have dissipated the illusion. The source of this error is clearly explained in a dissertation communicated to the Royal Academy of Surgery, by *M. Siebold*, professor of medicine, anatomy, surgery and midwifery, at *Wurtzburg*. Numerous experiments, long before the first success of the section of the *pubes* performed by *M. Sigault*, had taught him that a separation of eighteen lines might be obtained; that is to say, six lines spontaneously after the section, and an inch artificially or by separating the thighs of the subject: but that the latter must be dangerous

in the living woman, on account of the internal rents, as well in the region of the bladder, as of the *sacro-iliac symphyses*. From those observations he thought he could fix the bounds within which the three following methods of delivering ought to be circumscribed; viz. with the forceps, by the section of the *symphysis* of the *pubes*, and the Cefarean operation; and at the same time determine the cases in which one of them would be indicated, to the exclusion of the other two. He expresses himself thus.

2023. “ From the result of my experiments,” says *M. Siebold*, “ I thought I might conclude that an exact knowledge of the absolute degree of the narrowness in the *pelvis*, of its proportion to the size of the child’s head, and of the quantity of amplitude required for a successful passage might become an infallible guide to the accoucheur, to determine him in all cases to the necessary and absolute use of one of the three stated methods, to the exclusion of the other two; that is to say,” continues he, “ for six lines and under, *M. Levret’s* forceps; from six to eighteen, and even twenty lines, the section of the *pubes*; and beyond that term, the Cefarean

“sarean operation *.” We observe here that the author is of opinion that the child’s head may be compressed nearly six lines, with *M. Levret’s* forceps, to which he gives the preference; and that it would be extremely dangerous to carry the separation of the *ossa pubis* beyond eighteen and twenty lines. “I know very well,” adds he, “that *M. Sigault* and others pretend to have obtained two inches, and even two inches and an half or more: but I must reason from my own experiments which have always given me the same result, as well on dead bodies, as on the living subject on whom I performed it.”

2024. It was on this ground that *M. Siebold* performed the section of the *pubes* in a woman of thirty-five years of age, the 4th February, 1778. She had had seven children, all born dead, six of whom came naturally, and the seventh had been torn away piece-meal. The *pelvis* of this woman had an opening of thirty-three lines from *pubes* to *sacrum*, and the augmentation necessary for the passage of the child

* This passage is taken from the dissertation of *M. Siebold*, which was communicated to me by a foreigner before it was presented to the Royal Academy.

being thereby determined to be an inch or fifteen lines at most*, he did not hesitate, he says, to perform the section of the *symphysis*. It was laborious, he adds, because it was necessary to use a saw, to separate the bones, entirely consolidated by the ossification of their *symphysis*. He turned the child, and brought it by the feet, but with so much difficulty that he was obliged to compress the head without mercy†. He several times thought himself at the utmost limits of the art, and exceedingly regretted, as perhaps, continues he, I still regret, that I suffered myself to be seduced by the charms of the new operation, and that I preferred it to the Cæsarean: these are his own expressions. Notwithstanding the accidents which followed, the woman recovered very well.

2025. It will without doubt appear surprising that such a man as *M. Siebold*, whom merit seems to have raised to the top of his

* *M. Siebold* allows however but three inches and an half to the small diameter of the child's head; but he is not ignorant that in some it is larger: therefore he here carries the excess of it over the strait of the *pelvis* to the highest point.

† *M. Siebold* presumed at this time that the child was dead before the operation,

profession, should have thought he could augment the small diameter of the ellipsis formed by the entrance of the *pelvis* in the woman who is the subject of his observation, so much as twelve or fifteen lines, by separating the *ossa pubis* only fifteen or twenty. His experiments would have secured him from this error, and have discovered to him the important truths I have just established, if he had not been prejudiced in favour of the new operation. Supposing that the superior *strait* were of a circular form, and that it might preserve it after the section of the *pubes*, *M. Siebold* ought not to have expected from such a separation, an increase of more than six lines in the diameter in question: but he must have been very far from obtaining that, as I have already demonstrated. If a man really skilful could not resist the charms of this new method of delivering, notwithstanding the experiments he had made before he had heard of its first success, can we wonder at the great number of its partisans, and that it has been practised so often in so short a time? The greater part had not even had an opportunity of examining the product of it on a dead body, and almost a whole faculty, from the testimony of some of its members,

members, maintained that it was as certain in its effects, as easy to perform.

2026. Not only the product of a separation of the *ossa pubis* cannot, in any case, turn entirely to the advantage of the small diameter of the superior *strait*, but we should also be in an error if we imagined that the internal *contour* of the *pelvis* augmented the whole extent of that separation, as a circle formed of one single piece would do. The relation of the three bones which form the superior *strait*, and the manner in which the *sacrum* is wedged between the *ossa ilia* clearly prove the truth of this assertion. We cannot separate the *ossa pubis*, without making the posterior part of the *ossa ilia* press the base of the *sacrum* from behind forward, and carry it a little inward. The situation given to the woman during the operation also tends to produce that effect, since it is the posterior part of the *pelvis* which then rests on the edge of the bed: the pressure which the child exerts within, cannot counter-balance it. In all my experiments I have supposed the base of the *sacrum* fixed, in order to consider the product of the section of the *pubes*, in the point of view most favourable to the opinion of its partisans.

2027. In

2027. In order to explain more certainly the principal truths I have just stated concerning this new operation, and render them sensible by a demonstration to those who might refuse to yield to the evidence of reason, I have caused two *pelves* to be engraved whose deformity would have required the Cesarean operation exclusively of all other methods ; though they do not represent the greatest possible defectuosity, since there are narrower which I should have preferred if I could have procured them*. If I can demonstrate the inutility and danger of the section of the *pubes* in such *pelves* as those †, it will be easy to pronounce on its real

* *M. Camper*, a Dutch physician, wrote a few years since, that he had lately performed the Cesarean operation on a woman, who died a few hours afterwards, whose *pelvis* had not an inch in the small diameter. *M. Louis* communicated the letter of that physician to the Royal Academy of Surgery. The celebrated Dr. *William Hunter* preserved several which are not less deformed : one of them has but five eighths of an inch, that is to say, six lines and an half or thereabouts in the small diameter ; another eleven lines, &c.

† In one of these *pelves*, the small diameter of the superior *strait* is two inches six or seven lines, and in the other, fourteen or fifteen lines only. See the XV. and XVI. plates, and their explanation.

value

value with respect to women in whom that canal is still more defective.

2028. I do not however expect to bring over to my sentiments, those who have been seduced by the novelty of this operation, and by the unmerited praises which have been lavished on its authors ; because it gives too much pain to some people to abjure their errors, even when they are involuntary ; but I shall be satisfied if I can fix the opinion of young students who have not yet taken either side, and who only look for a clear decision. I shall bring together for them, in support of all I have advanced, the scattered facts which they could not collect themselves, and I will examine them without prejudice ; although I have been charged with being led astray by it in my first edition, and even of being guilty of falsehood.

SECTION III.

Of the principal Facts concerning the Section of the Symphysis of the Pubes.

2029. If no other end has been proposed in practising this new operation but the preservation of the mother and child, it has had no success except so far as it has perfectly accomplished that view. To establish its title to that, it is not sufficient, though most of its defenders think the contrary, that the child has given feeble signs of life at its birth, or that the mother has survived it a few minutes, or even days: for taking it in so loose a sense, the Cæsarean operation would have had much more success, on an equal number of women, than the section of the *pubes*; since it always saves the life of the child; and it is excessively rare for the woman to sink under it immediately.

2030. Among the successful cases attributed to the section of the *pubes*, and which are also very few in proportion to the number of women subjected to that operation, there is scarcely one which may not be justly contested, or against which we cannot raise solid objections;

either because their authors have been deceived in the estimation of the diameters of the *pelvis* and of those of the child's head, granting to the latter a greater extent than they had, and to the former often much less; or because they have greatly exaggerated in the valuation of the separation they assure us they have procured in the *ossa pubis*. Since the necessity of such an operation can only be determined by the excess of the diameters of the child's head over those of the mother's *pelvis*; since its advantages, its inconveniences, and its success also are subordinate to the original proportion of those dimensions, and the degree of separation of the *ossa pubis*, I shall endeavour to shew what each of them must have been, in order to appretiate the use that has been made of this new method, and the most striking successes that it has had. I shall not enter into the same detail respecting every case, because the number that has been collected is very great: I shall dwell particularly on some which are better known to me. It will be sufficient to explain why the operation has had the desired success in one case, while it has entirely failed in another, to shew the class each case I shall mention naturally belongs to. I shall
examine,

examine, for example, the case of *Souchot*, and that of *Vespres*, on both of whom the operation was performed by *M. Sigault*; because one of them presents the desired success, and the other, an assemblage of all the accidents which seem necessarily to result from such an operation, in cases where the deformity of the *pelvis* opposes the greatest obstacles to delivery, and leaves no real resource but in the Cesarean operation: the case for which the section of the *pubes* was at first exclusively recommended.

2031. This first success, on which I shall particularly dwell, has been warmly discussed by all the writers who have attacked the new operation, and some of them have ventured to publish that it would not have been obtained but because the operation was not necessary in *Souchot*; but in advancing to that point they have proved nothing, and the argument furnished in favour of the defectuality of the *pelvis*, by her four former labours in which the child was constantly sacrificed, whatever care was taken to preserve it, is left subsisting in all its force. I shall not undertake to prove whether that operation was useless or necessary, whether the woman might have been delivered

livered in any other manner with fewer inconveniences to herself, and the same advantages to her child *, but only how the section of the *pubes*, which was performed, could render that passage accessible to the fifth child, which had been fatal to the four former.

2032. Whatever degree of separation took place between the *ossa pubis* after the section of the *symphysis*, it must have augmented the size of the passage; that is an incontestable fact: but how much did it enlarge in the direction in which it was originally too narrow? This is the point which we must discuss. The solution of the problem would be easy, if we knew the dimensions of *Souchot's pelvis*, as well as we know those of her child's head. According to the estimation made of it by the physicians who performed the operation, the diameter of the *pelvis* is only two inches and an half in the direction from *pubes* to *sacrum*

* The circumstance was not one of those which leave a choice between several methods. The child presented the feet; it was necessary to disengage them, and the forceps could not be used till after the exit of the body. It is well known that this species of labour is dangerous to the child, when the *pelvis* is deformed: that of *Souchot* is really so.

superiorly,

superiorly *, and that of the child's head was just three inches and an half. The excess of the latter was consequently one inch, as well as the amplitude to be procured to the former. A separation of two inches and an half between the *ossa pubis*, the greatest which it was then thought could be obtained, not being able to give more than six lines to the diameter of the *pelvis* in the aforesaid direction, they thought to make the remaining surplus of the head pass into the separation between the bones, and moreover they had the precaution to make the *parietal protuberances* pass successively through the *strait*, in order to get another line by that means: so that by this system, the section of the *pubes* produced a result of thirteen lines at least, considering it relatively to delivery. Notwithstanding this ingenious calculation, and this great product, the passage

* *Messrs. Sigault and Alph. le Roy* support themselves on the authority of *M. Levret* and several other accoucheurs of note. If *M. le Roy* only measured, as he says, two inches and an half exactly from the projection of the *sacrum* to the inferior edge of the *symphysis of the pubes*, he ought not to allow the same extent to the small diameter of the superior *strait*, which is always some lines shorter than that space. See my first volume, par 132.

was still found narrow enough to give some obstruction to the exit of the head, and to endanger the child's life*.

2033. It seems evident that this plan was not formed till after the execution, and that they have only sought to explain what they must have done, according to the opinion which they entertained that the diameter of the child's head was an inch larger than that of the *pelvis*, and not according to what they did and observed: because no one had yet determined the product of a separation of two inches and an half between the *ossa pubis*, with respect to the different diameters of the *pelvis*, and particularly respecting that which goes from before backward; because they did not measure the separation, as they affirm they did †, neither in the case of *Souchot*, nor in any other; because the accoucheurs of that woman were then agitated, much agitated, as they

* They without doubt forgot to publish these little details, which *M. le Roy* communicated to me verbally at the time, as well as to many other persons.

† It was by presenting to the separation the end of the *metacarpus*, the fingers being bent, that *M. le Roy* determined its extent, as every one knows, from his writings: let every man form his own judgment of this procedure.

have

have publicly confessed; lastly, because this great product, and those sage calculations which we admire in their history of it, were not then necessary.

2034. Though they have allowed but two inches and an half to the small diameter of the superior *strait*, other accoucheurs equally skilful have assigned it six lines more, and I can affirm that they were not deceived if they considered it a little diagonally as the smallest diameter of the child's head always presents; that is to say, from one of the sides of the projection formed by the base of the *sacrum*, to the *symphysis* of the *pubes*. *M. le Roy*, whom I quote here oftener than *M. Sigault*, has made this observation as well as I, and expresses himself as clearly when he says, “ the transverse dia-
 “ meter of the head which answers to that
 “ which goes from before backward in the su-
 “ perior aperture of the *pelvis*, does not pass
 “ like the great diameter which advances in
 “ an oblique manner approaching almost to
 “ perpendicularity: that it is true that one
 “ *parietal protuberance* descends before the other
 “ and a little on one side of the *sacrum*, so
 “ that,” adds he, “ a *pelvis* which in its dia-

“ meter from before backward has a line or
 “ two less than the transverse diameter of the
 “ head, may give it a passage by means of this
 “ mechanism *.”

2035. I examined the *pelvis* of *Souchot* again and again, in presence of five and forty pupils. The *pelvimeters* of *Messrs. Coutouly* and *Trainel* were successively developed in it: both those instruments gave the same result, and confirmed that which I had obtained from the application of the finger, and by my *calipers*. Applied against the most convex part of the projection of the *sacrum*, we could not develop them freely more than two inches six or seven lines; but inclined towards the left side of that projection which is thrown very much to the right, their development extended to three inches. As it is according to that line that the transverse diameter of the child's head commonly presents, or in which we ought to direct it in difficult cases, we may boldly affirm that the small diameter of her *pelvis* is three inches. I shall observe moreover that it is very large inferiorly, and that I never met

*. See *M. Alph. le Roy* Rech. Historiq. & Pratiq. sur la Sect. de la Symph. du Pubis, pag. 69 & suiv.

with a *pelvis* better formed in that part. It is now easy to determine how much the diameter of the child's head exceeded that of this *pelvis*, as well as the degree of amplitude to be acquired by the latter, and what must have been the degree of separation which procured it.

2036. As the head of this child was but three inches four lines thick from one *parietal protuberance* to the other, we cannot, with any regard to truth, allow it more at the instant of its birth, as those have done who assure us that it was then two lines thicker *. The bony case constantly changes its form in passing through a *strait* a little too narrow, it flattens more or less from one side to the other, according to the narrowness of the *strait*, and does it more easily or difficultly, according as the *parietal* and other bones are more or less solid, and are connected in a looser or stricter manner. The head never presents less thickness than when it has just passed that *strait*, and afterwards recovers sooner or later what it had lost in its passage. Though the face of the child should shrink and grow thinner in the first days, the bony case loses nothing of

* See *M. Alph. le Roy*, broch. déjà citée, pag. 61.

its dimensions*. I did not see this child till the thirteenth day after its birth, and its head seemed to me to have the requisite conditions for an easy change of figure in an eminent degree. Its whole external appearance presented marks of immaturity which are not usually found except in children who come at eight months, nor was it bigger than those usually are, though we could not attribute it to the wasting into which it was said to be fallen.

2037. To allow that there was a surplus of four lines in the transverse diameter of the head, over that of the mother's *pelvis*, we must suppose the head of the *fœtus* was incapable of changing its form and dimensions, and could not undergo the reduction I have stated; we must consider it as a truly solid body, as the partisans of the section of the *pubes* have done. As we cannot determine exactly the degree of compression of which it was susceptible from one *parietal protuberance* to the other, nor that which it suffered in passing through the *strait* though interrupted in its anterior part by the section of the *symphysis* and the separation of

* *M. le Roy* seems to be of a contrary opinion. See page 61 of his pamphlet,

the bones, I shall not be charged with exaggeration in supposing it to be only two lines. According to this supposition, the surplus of the diameter was no more than two lines, as well as the augmentation to be procured to that of the *pelvis*.

2038. A separation of an inch between the *ossa pubis* will appear more than sufficient to remove that disproportion; I appeal for that to the testimony even of those who affirm they carried it to two inches and an half on *Souchot*. At an inch, says *M. le Roy*, the *pubes* diverge forward two lines*, and besides, if the *pelvis* was open but an inch before, a very small portion of the *parietal protuberance* could be let in between the bones, which would not have procured more than three lines of diminution in the transverse diameter of the head†. Is not this agreeing to a result of five lines or thereabouts, in the direction in which he pretends to have obtained thirteen from a separation of two inches and an half? Admitting a result of two lines only, which is what I have generally

* Rech. Historiq. & Pratiq. sur la Sect. de la Symphyse, page 71.

† Idem, page 70.

obtained in all the experiments I have made, those two lines would have been sufficient for the passage of the child; supposing even that one of the *parietal protuberances* were not let in between the bones, and that the head had not suffered a reduction of more than two lines in its transverse diameter. A greater separation in *Souchot* would have procured more facility than was met with in extracting her child.

2039. If we cannot infer from these reflections that the success of the section of the *pubes* in the woman in question, was because the *pelvis* was originally large enough for the passage of the fifth child, as has been frequently asserted, at least they will assist in estimating that success justly and all others of the same kind: for there is not a single case where both mother and child have been preserved, to which they might not be applied. Those successes in future will only impose on the multitude who are still ignorant that the danger to the woman in the section of the *pubes*, arises only from the great separation of those bones; and that they may be separated an inch without any mortal injury to the neighbouring parts. But what would that slight separation produce

produce in a *pelvis* so contracted as to bear no proportion to the child's head, as in those cases which require the Cefarean operation ?

2040. All the women on whom *M. Sigault* operated did not reap the same advantage from it as the whose case I have just discussed ; though the *pelvis* in all of them except *Vespres* seemed as favourable to the success of the operation. If they suffered fewer ill consequences from it, they lost their children in the efforts which were still necessary to extract them, notwithstanding the development which the separation of the *ossa pubis* must have procured. *Blandin*, on whom the operation was performed in 1778, as well as another named *Verderais*, were delivered again the year after ; one of them quite naturally *, and the other by the help

* *Mrs. Bellami*, a licensed midwife, in 1780 published an account of this labour, which happened on the 7 October 1779. She declares that *M. Sigault*, who was called before her, went away only because the woman *Blandin* would not submit a second time to an operation which had been laborious the year before, and unsuccessful ; that the latter labour was not long ; that the child was larger than others that were at the church at the same time to be baptised ; lastly, that the *pelvis* appeared to her to be neither of the largest, or smallest size, and that the *ossa pubis* were very close. *M. Sigault*,

help of a midwife*, who was obliged to turn the child, because it presented a hand with the head. The latter died soon after its birth; but that of the other woman, as soon as it appeared, gave signs of great strength and a good constitution. We know nothing yet of the particulars of what happened after the section of the *pubes* to the woman named *la Forets*; but there is every reason to suppose she again became pregnant like the former, and was delivered in the same manner, as she had much less reason to complain of the consequences of the operation, since she began to walk by the fifteenth day.

2041. None of these women were so unfortunate as *Vespres*, because none of them were so deformed, and so far from a possibility of being delivered: they lost their children, but they recovered, some sooner, some later, and

gault, who procured this *pelvis* after the death of the woman, gave me to understand that it was about three inches in the small diameter.

* *Mrs. Ridé*, who communicated this case to the Academy in 1782, observes that the *pelvis* is contracted from before backward, without determining how much; on account of the great projection of the base of the *sacrum*, which, she says, juts to the left side.

were

were capable of becoming pregnant again. *Vespres* survived it but five days, which she passed in the severest anguish, and was manifestly a victim to the operation; though it was published at the time that she died of a cause quite foreign to it*. Before the operation, the *pelvis* had been estimated at two inches and an half or thereabouts; and the opening of the body shewed that it was but twenty-two or twenty-three lines. Two surgeon-accoucheurs† had declared the indispensable necessity of the Cæsarean operation, and the event confirmed them, as well as many others, in the opinion that the section of the *pubes* could not supply the place of it. Though the *ossa pubis* were separated but an inch and an half or thereabouts, the *sacro-iliac symphyses* were visibly injured by it, as well as the neighbouring parts. On inspecting the body, those *symphyses* were found open, and the *periosteum* detached from them; there was a collection of purulent matter of a dark grey colour which

* See the account of this case drawn up before and after the operation, and that of the opening the body; the critical reflections of *M. Lauverjat*, and the reply to those reflections by *M. Sigault*.

† *M. Lauverjat* and *M. Coutouly*.

extended very far into the cellular tissue of the left *iliac fossa*, &c. &c. What farther proofs can be desired of the insufficiency and danger of the new operation, than the death of both mother and child, in the case for which it had been exclusively proposed ?

2042. As this case confirms the insufficiency and danger of the section of the *pubes*, when the deformity of the *pelvis* is extreme, so that of *Blandin* is an example of the abuse its author made of it, and which he would have done a second time on the same woman, if she would have submitted to it the 7 October 1779. Would any one believe that these two cases, instead of destroying *M. Sigault's* good opinion of his new operation, should make him conceive still greater hopes from it ? “ This “ event,” says he, speaking of the case of *Vespres*, “ proves how far the advantages of the “ section of the *pubes* may extend ; since by “ that operation I extracted a very large child “ alive, from a *pelvis* very narrow and exceed- “ ingly deformed.” And concerning the case of *Blandin*, we read in the *Journal de Paris* of the 21 October 1779, that that woman, on whom the operation in question had been performed the preceding year, had just been delivered

vered naturally of a child which was in good health, as well as the mother; and that we ought to conclude from that circumstance, that the section of the *pubes* being once made, might be no longer necessary in laborious labours arising either from a deformity of the woman, or too great a size of the child's head. This woman, the Journalist adds, in her former labour, had a child whose head was fourteen inches in circumference, and the last being only twelve inches, the operation was no longer necessary.

2043. We might without doubt excuse *M. Sigault* for having, at his second step in this new path, overleaped the bounds he had prescribed himself, if he had preserved the child whose head was fourteen inches in circumference, if he had discovered afterwards that the *pelvis*, too small for the passage of that child, was large enough for that whose head was but twelve inches, and if he had not in the latter case insisted on the necessity of the same operation. At this word circumference, many people must have demanded how it was taken, and which circumference was meant: for very few among us are ignorant that there are two to be considered on the head of the *fœtus*, relatively

latively to delivery, that is to say, one of thirteen and an half or fourteen inches, and another of ten or eleven only, in a child whose head is three inches and an half thick from one side to the other. It is the latter which the head presents to the openings of the *pelvis* in a natural labour, and which the accoucheur ought to make present to them, when things are going on otherwise : for in that his art consists. If the author of the paragraph I have just quoted, ever heard of this small circumference, he must allow that the head of the latter child of *Blandin* was very large, and that of the former still larger ; since it must have been four inches in the small diameter, which is rarely met with, and the other four inches eight lines, which is met with much more rarely still. Either of them would equally prove that the woman's *pelvis* was at least of a natural size. If the great circumference was meant, the first head presented nothing remarkable in its size ; and the latter was a little less than usual.

2044. It is very reasonable to think that the bigness of the child's head may produce great obstacles to delivery, even when the *pelvis* is well enough formed for the passage of one of
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the usual size ; as also that a larger head, but softer and more flexible, will easily clear a *pelvis* which one more solid, though smaller by some lines, could not do. Although *M. Sigault* thought he could exculpate himself for having performed the section of the *pubes*, without success, on a woman well enough made to be delivered naturally the following year, by only stating the disproportion between the two children, some followers of the new method have explained the case very differently, and have thought that the facility of the last labour was because the operation had made the *pelvis* larger than it was before: the *ossa pubis*, in their opinion, not being able to consolidate and reunite like fractured bones, but only by the interposition of a *callus* which keeps them always apart. This ridiculous opinion is no way different from that which many accoucheurs have held of the consequences of a tumefaction of the *symphyfes* of the *pelvis* in the course of pregnancy ; since they have also published that the hips remained wider after delivery, and that the *pelvis* became larger in all parts. Those who have admitted it in the section of the *pubes* doubtless did not know that *Mrs. Belлами* found the bones very close in *Blandin* ;
that

that the Commissaries of the Faculty of Medicine have declared that those same bones were in a similar state of approximation in *Souchot* on the twenty-seventh day from the operation, and that only a single line could be felt in the length of the *symphysis*; and *M. le Roy*, that their approximation was so sensible on the fourteenth, that he suspected they were reunited. Besides, if we should admit this *callus*, to what would the product of it be reduced for the small diameter of the superior *strait*? A *callus* of six lines, which would doubtless appear of a very extraordinary thickness, would it procure it an augmentation of more than a line? We must be very inconsistent, to affirm that such a trifling augmentation could give the child a passage through a *pelvis* whose extreme defectuosity left no resource before but in the Cæsarean operation or the section of the *pubes*.

2045. The author of the latter has had much less success with it than *M. Alph. le Roy*; and the only success he had with it appears much less brilliant than the smallest of *le Roy*'s. *M. Sigault* in five women lost one, and four children; *M. le Roy* in an equal number preserved four, and five children. A woman

man twenty-eight years old, three feet three inches high, says he *, big of her first child and fatigued with eighteen hours suffering, calls him to her assistance the 18th July 1779, and he performed the operation almost instantly in presence of five persons, that no one might say there was any clandestine proceeding †. The *ossa pubis* recede from each other more than two inches retiring under the *teguments*; that opening is afterwards gradually enlarged almost to three inches merely by separating the woman's thighs, at the instant when the child's head was to pass; he turns it immediately ‡, and brings it along by pulling

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* In May 1785, she was four feet three inches.

† Among those five persons we find three women, a pupil of *M. le Roy* and a man of consideration. There will always be clandestine proceedings, when there are no other witnesses to an operation which can only be judged by accoucheurs. Could *M. le Roy* procure none then to be present, as he did afterwards with the woman who is the subject of his fifth observation? All the accoucheurs in the capital would have thought it their duty to attend him, to profit by his skill, or assist him with their advice.

‡ Its head was situated transversely, having the *occiput* turned to the right side of the mother: a position which *M. le Roy* affirms to be always laborious, and often troublesome, even in the best formed *pelvis*, at least, says he, unless they be very large. A longer experience has without doubt since

ing only on the left foot, the only one which it was thought proper to bring down, and it comes along easily with the precaution of engaging the breech obliquely or one side before the other *. *M. le Roy* adds, that the child at first appeared as if dead, but that it recovered by the usual aids; that it was very large, its head having four inches all but a line in its transverse diameter, or from one *parietal protuberance* to the other: so that by this operation, he says he made a body of four inches all but a line, pass through a *pelvis* which at first was but two inches five lines in diameter. The woman felt so few inconveniences from it, that she sat up from the ninth day, walked on the twelfth, and was presented to the Faculty of Medicine the twenty-eighth.

2046. We should be in an error, if we imagined that *M. le Roy* had committed none in his estimation of the diameters of the *pelvis* of the woman named *Julia Collet*, and in that of

taught him, that that position of the head is one of the most frequent and favourable; and that in ten labours it will happen more than once.

* He ought not to take any credit for having engaged the breech in that manner, since it cannot engage otherwise when we pull the child by one foot only.

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the diameter of the child's head. That woman applying to me the 28 May 1785, for help for a descent of the *uterus*, to that degree that its neck was two fingers breadth without, and for which I introduced a pessary, I examined her *pelvis* carefully: which I again did the eleventh of June following, in presence of several physicians and surgeons*. Having had recourse successively to various methods of estimating the extent of the small diameter of the superior *strait*, they all gave a result of two inches six to two inches eight lines from the middle of the projection of the *sacrum* to the *symphysis* of the *pubes*, which we found very regular within. As it is not according to that line that the small diameter of the child's head passes; but according to that which would go from one of the sides of the projection of the *sacrum* to the same *symphysis*, it was not a *pelvis* of two inches five lines on which *M. le Roy* operated, but of about three inches relatively

* *M. Audiberty* and *M. Assaliny*, correspondents of the Academy of Surgery: *M. Rung*, pensioner of the King of Sweden, and professor of medicine, *Messrs. le Bar, Verdier*, &c.

to delivery: which sufficiently explains the success of the new operation on *Julia Collet*.

2047. He was not less deceived in estimating the diameters of the child's head; since the day after the labour he found it to be only three inches eight lines. A much more unpardonable error is that relating to the separation of the *ossa pubis*, which he affirms to have been carried almost to three inches. The importance of this point well deserves that the public should be informed how the separation was measured, and which of the five persons who were witnesses of the fact measured it. *M. le Roy* not having been able to measure it himself when it was at three inches, being occupied, as he says, in endeavouring to bring down the face and chin of the child with his left hand, while with the other he raised up the body which was without. If he did not carry it to that degree, many people will think it may be done, and will not spare their efforts to obtain it; as others would have thought they missed their aim if they had not carried it to two inches and an half exactly. In preserving the child by such an extraordinary separation, they may be certain they
would

would sacrifice the mother, as they have done who contented themselves with carrying it to two inches and an half, and even those who limited it to less.

2048. Encouraged by such an extraordinary success, seven days after having operated on *Julia Collet*, *M. le Roy* performed the same operation on a woman of *Gros-caillou*, much more deformed with respect to the *pelvis*; since he estimated it at only eighteen or nineteen lines * in the small diameter of the superior *strait*; and the subsequent symptoms were still more simple than in the former: this woman besides was four feet nine inches high, had been delivered six times before, and every time by the extremes of the art. The section of the *symphysis* was difficult and could not be finished but by repeated trials; because that *symphysis* was very thick, and so long, that he was obliged to go under the teguments to cut its superior and inferior part, though the incision in them was two inches and an half or thereabouts †. The section being made, the mem-

* *M. Goubelly*, D. M. P. some days after the operation, judged that the diameter was an inch and three quarters. See *M. Alph. le Roy*.

† This *symphysis* must then have been three inches in extent: which would have been a circumstance *unique*.

branes were opened, and the child's feet which presented were brought down, and the whole of it extracted without any great difficulty; only taking care when the head approached the superior *strait* to let the posterior part of it into the separation of the *ossa pubis*, which was then about three inches*. The transverse diameter of the head was found to be three inches eight lines immediately after delivery.

2049. The woman named *du Belloy* felt acute pains after this operation; but they were soon appeased, and the next day she was well enough to move freely in her bed, and even to be shifted into another; which she did every day without excepting one. The external wound, and without doubt the *symphysis*, was cicatrised by the fifth; she began to walk on the tenth, went out of her chamber the seventeenth, was at church the twentieth, was presented to the Faculty of Medicine the twenty-first, and eight days afterwards resumed her

* *M. le Roy* ought to have informed us of the motive which led him to let the hind part of the head of the *fœtus* into the separation of the *ossa pubis*, and not the *parietal protuberance* as in the case of *Souchot*: and why he had no need of using the same precaution with respect to *Julia Collet*, whose child was much larger, &c.

laborious occupation of a washerwoman, enjoying then the most robust health, as *M. le Roy* says. Among the physicians who could not see this woman without a sort of wonder the fifth day after the operation, mention is made of *M. Chaptal*, Member of the Faculty and of the Academy of Sciences of *Montpellier* *.

2050. If the success obtained on *Julia Collet* must have surprised the multitude, that which followed presently afterwards on *du Belloy* must have astonished them much more, and seemed much more likely to augment the number of the partisans of the section of the *pubes*. Till then it might be believed that the utility of this operation was limited, and that it could not procure a passage large enough for the *fœtus* except through a *pelvis* moderately contracted. *M. le Roy* had even published that nothing but the Cæsarean operation could save the child when the *pelvis* presented but twenty-one lines in the small diameter superiorly ;

* *M. Chaptal*, who then attended my lectures on midwifery, has given me permission to publish that he doubted whether the operation had been really performed ; and more still that a woman so well made externally should have a *pelvis* so contracted as hers was said to be. He was not imposed on by it.

though that dimension of twenty-one lines or under appeared to him then imaginary; *M. Sigault* would not have performed the operation on *Vespres* if he had not been assured that her *pelvis* had two inches and an half in the small diameter, if he had not persuaded himself so by his examinations, and if he had considered nothing but his own interest: therefore they both admitted limits to its utility. But the example of *du Belloy* tends to cause it to be adopted in all cases of deformity: for if the *pelvis* of that woman does not present the most extreme degree of defectuosity *, yet the separation of three inches obtained so easily and with so few inconveniences, will not perhaps appear the farthest point to which it may be carried.

2051. Having nothing very positive to object to *M. le Roy* concerning the state of *du Belloy* at the time I published the first edition of this work, I contented myself with relating an experiment made in the *Hotel-Dieu* of *Paris* the 25 August 1779, on a woman who died the eleventh day after the Cæsarean operation

* I have one in my collection of only fourteen lines. See the XVIth plate, and there are some still more contracted.

performed in the *linea alba*: this woman was œdematous, which rendered the case much more favourable. The subject being placed on the edge of a table, the legs separated and supported as recommended by the partisans of the section of the *pubes*, we took out the *uterus* in order to engage in the *pelvis*, the feet of a child which we had placed in the belly. The *pelvis* was but twenty lines in the small diameter, and four inches and a quarter in the transverse. The diameter of the child's head was but three inches five or six lines from one *parietal protuberance* to the other; the *trunk* of it was thin; and we had pressed and kneaded all parts of it, to restore the suppleness which death had taken from them. We attempted to bring the child through the *pelvis* by pulling its feet, but notwithstanding all the force we could apply, we could engage it no farther than the breast; we then made the section of the *pubes*. Having denuded the *symphysis* by means of an incision of two inches and an half, preserving below, the anterior commissure of the *labia pudendi*, and above, an extent of eighteen or twenty lines under the inferior angle of the Cæsarean operation.

2052. Notwithstanding the kind of wedge
formed

formed by the child's body forcibly engaged and compressed in the *pelvis*, the *ossa pubis* at first separated but nine lines: that opening was augmented as gradually as possible to twenty-one, by separating the woman's thighs; but we were obliged at the same time to pull at the hips, to extend it to two inches and an half. Limited to this latter degree, we endeavoured to bring down the child's head which had spontaneously placed itself in the most advantageous position, since one of the *parietal protuberances* answered to the opening of the *ossa pubis*, and the other to the left lateral part of the projection of the *sacrum*, the *occiput* being turned to that side. Several gentlemen of the profession employed their strength successively, in pulling at the *trunk*, and on the lower jaw with two fingers placed in the mouth, without advancing it a single line: it would not pass the *strait* till I seconded those efforts by pressing on the head with one hand placed in the belly, and by compressing it strongly in the direction of its thickness.

2053. At the instant when it cleared the *strait*, the inferior angle of the incision in the teguments tore to the *vulva*, and the wound was so lengthened towards that of the Cesarean operation,

operation, that those three openings were very near making but one. The *sacro-iliac symphyses* which were already a little open, and the ligaments and *periosteum* ruptured by the time the *ossa pubis* were separated twenty-one lines, gave way entirely, and with so much noise as to be distinctly heard by every one of the assistants: so that the thumb might be placed across in them. The *ossa pubis*, after the exit of the head, remained separated three inches, and were, doubtless, still farther, at the time it cleared the *strait*. The angle of the right *os pubis* was two inches six lines distant from the center of the projection of the *sacrum*; and the angle of the left *os pubis* only two inches three lines; so that the diameter of the *pelvis* considered in the latter direction, was augmented seven lines, and ten in the other.

2054. Although we cannot determine, with exact precision, the product of the section of the *pubes*, in one *pelvis*, by what it gave in another, since it differs a little in each individual, on account of the particular form of the superior *strait*, the respective length of its diameters, and the greater or smaller curve of the bones, yet it seems to me that the experiment I have just related, sufficiently demon-

strates the little advantage to be expected from this operation in cases where the *pelvis* presents an opening of but eighteen or nineteen lines superiorly, or even twenty-one, like that of *du Belloy* *. If we compare these two facts, the contrast between their results will be very striking. In the woman who served for our experiment, great force was necessary to obtain a separation of three inches between the *ossa pubis*; it could not be carried so far without making a terrible destruction of the *sacro-iliac symphyses*, and without separating the *ossa ilia*, in a manner, entirely from the *sacrum*; the angles of the external wound were torn a great way, both above and below; we could not make the head pass through the *strait* without employing the greatest force, and combining it in the manner already described; though it was but three inches five or six lines in the small diameter. In *du Belloy* all these things happened very differently; a separation of three inches was made without violence or trouble; the external incision which it seems was not extensive, was not at all lengthened

* We have not forgot that *M. Goubelly*, D. M. P. some days after the operation found the diameter of this *pelvis* was an inch and three quarters. See *M. Alph. le Roy*.

by the tearing of its angles; and a head of three inches eight lines passed freely through the *pelvis*. The child was saved, and the mother suffered so few accidents, and was so well the day after the operation, that her accoucheur saw her very seldom after the first days. In the opinion of skilful persons who assisted at my experiment*, not one child in ten thousand could have, a moment, survived much smaller efforts than those which we were obliged to use in extracting ours from the dead subject; and no woman could fail to be a victim to the internal disorders which appeared in the *pelvis*. The case of *du Belloy* will certainly appear less surprising from the following observations.

2055. She had been delivered six times before the section of the *pubes* was performed on her; and every time, says *M. le Roy*, recourse was had to the extreme resources of the art; *M. Azeron*† had assisted her in the three last of those labours. We might be tempted to

* *M. Moreau*, surgeon-major of the *Hotel-Dieu*, *Messrs. Deleurye, Coutouly, Trainel, L'Heritier*, masters in surgery, and a great number of pupils.

† *M. Azeron*, a licensed surgeon, but not known in the practice of midwifery.

believe that it was only on the credit of that surgeon that *M. le Roy* declares the *pelvis* was but eighteen or nineteen lines in the small diameter; as he seems to have judged that of *Julia Collet* only from the testimony of a midwife: for we do not find in any of his writings that he examined it himself. If he could believe that the *pelvis* of *Julia Collet* was two inches five lines, how could he persuade himself that six children had passed through a *pelvis* of eighteen or nineteen lines? May we not ask what were those extreme resources which *M. Azeron* put in practice, to deliver this woman of her three last children? And how he could decide to give them the preference over the Cæsarean operation which was so clearly and exclusively indicated? Into how many fragments he must have been obliged to divide those innocent victims, to make them pass through such a narrow passage? Lastly, how his hand could penetrate it to direct the instruments?

2056. *Du Belloy* was really delivered six times before the section of the *pubes* was performed on her, and they had not been able to save one of her children; but none of them had been mutilated, according to the report
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of both father and mother. Several of them came without help after a very long labour; and the others were extracted with the crotchet, but entire. *M. Maritaine*, and after him *M. Azeron*, were her accoucheurs. They all came at full time, and were all larger than that which was brought alive after the section of the *pubes*: the latter, far from being of the size stated by *M. le Roy*, was so small, in the eyes of its parents, that they were long afraid they should not be able to rear it, and, in fact, it died at the age of fourteen months. She has had three others since the operation: *M. le Roy* was a witness of the birth of the first; and *Messrs. du Sellier* delivered her of the two others, who only gave some small signs of life after their exit. Would any one dare at present, notwithstanding so many proofs to the contrary, to assert that her *pelvis* was but eighteen or nineteen lines in diameter, or even twenty-one? Let us now state how I found it in 1785.

2057. This woman *du Belloy* coming to consult me on account of a descent of the *uterus*, for which I fixed her a *peffary*, as I had done for *Julia Collet* who recommended her to me, we examined her *pelvis*, my brother and I.

The

The descent of the *uterus* not permitting us to develop the *pelvineter* of *M. Coutouly* interiorly, we used the *calipers*, which gave a result of two inches three quarters, estimating it at the lowest; the thickness of the *pelvis*, taken from the middle of the *mons veneris* to the top of the *sacrum* posteriorly, being five inches three quarters; the woman exceedingly thin, and having very slender bones. The finger introduced into the *vagina*, repeatedly, perfectly agreed with this result; measuring near three inches and a quarter from the middle of the projection of the *sacrum*, to the inferior edge of the *symphysis* of the *pubes*. From these discoveries, and a great deal of detail which I shall pass over in silence, the success obtained on *du Belloy* no longer appeared to me so extraordinary; I saw nothing in it but a fresh proof of the unsuitness of its author to judge skilfully of the dimensions of the *pelvis*, and not a concealed intention of imposing on those whose opinion might be still wavering concerning the section of the *pubes*. This success naturally places itself next to that presented by the case of *Souchot*.

2058. This operation was also performed on three other women by *M. le Roy*; viz. on
one

one named *Huguet*, whose case was published in the name of *M. de Matthiis*, in the *Journal de Medecine* for the month of April 1785 *; an unknown lady, at the house of *Mrs. Morlai*, a midwife, the 12 March 1785 †; and a third at which I was present, the 24 April the same year ‡. The *pelvis* of the first had but two inches and a quarter in the small diameter according to the estimation of the doctor, and of several who signed the account of it without having examined the woman §. That of the lady *incognita* but two inches; ten persons also attest that, though none of them had certified themselves of it by touching ||. Although the separation of the *ossa pubis* was carried beyond two inches and an half in *Huguet*,

* *M. de Matthiis*, surgeon in the army of the King of Naples, then a pupil of *M. le Roy*.

† An exact account of this case was inserted in the *Journal de Paris* the 17 April 1785, with a letter from the author exceedingly abusive of the surgeons.

‡ This latter case has not yet been published.

§ *M. Asdrubal*, a pensioner of the Pope's, and pupil of *M. le Roy*; *M. de Matthiis*, and others.

|| Among the number, are *M. Philipp*, D. M. P. Messrs. *de Matthiis* and *Asdrubal*, and Madame *Morlai*, at whose house the lady was.

the consequences of it were so trifling, that at most there existed a little fever during the first days; and the external wound which was closed from the next day, presented only the appearance of a slight scratch; the *symphyses* were already swelled; and lastly, the woman was perfectly recovered the seventeenth day. The child was very well, and its head was three inches nine lines in the small diameter. The lady on whom the operation was performed at the house of *Mrs. Morlai* was not less fortunate. I saw her on the sixth day; no lying-in woman could be better for the time; the *ossa pubis* appeared to me at most to be separated two lines. The account of my visit, drawn upon the spot, was sent the next day to the king's first surgeon *.

* This case had interested *M. le Baron de Breteuil* then minister, and the account in question was to be communicated to him in support of those which *M. le Roy* had already sent him: he having desired *M. Andouillet* to choose one of the Members of the Academy, to visit the woman constantly till she should be perfectly cured, and to inform him of the most important circumstances. From my statement of the case, *M. le Baron de Breteuil* ordered that I should see the child which they had doubtless sent to the hospital, and which I could not see but by virtue of that order: but it was then dead, and I could not judge of its size.

2059. A hope of being cured of a considerable descent of the *uterus*, also procured me an opportunity of examining *Huguet* in the course of May 1785 ; though the month before it had been published that the section of the *pubes* had cured her of that complaint which had troubled her ever since her first lying-in. It was *M. de Matthiis* himself who sent her to me, after having acquainted me that I should find her *pelvis* much larger than it had been estimated at the time of the operation ; and I can affirm, without fear of being contradicted by the fact, that it is really a great deal larger. *M. de Matthiis* assured me that he had not examined it till after the perfect consolidation of the bones. Measured with the *calipers*, her *pelvis* is six inches and an half exteriorly, which gives a result of at least three inches for the diameter which goes from the *pubes* to the projection of the *sacrum* : the woman being not very lusty. The finger introduced into the *vagina* cannot touch the projection of the *sacrum* without extreme difficulty, and measures a space of more than three inches eight lines from the middle of that projection, to the inferior edge of the *symphysis* of the *pubes* ; which also denotes a diameter of more than three inches,

instead of two inches and a quarter. The accidents which followed the operation, according to the account of the woman, no more resemble those which have been published concerning it, than her *pelvis* resembles that which they thought they had cut the *symphysis* of.

2060. He was not less deceived in estimating the diameters of the *pelvis* of the woman at the house of *Mrs. Morlai*. When I certified the good state in which I found her on the sixth day of her lying-in, I suspended my judgment on the necessity of the operation till after the examination of the *pelvis*, which was not made till the 16 April following. *M. le Roy* examined it again, in presence of me and *M. Philipp*, already mentioned, and again assured us that it was but two inches as at the time of the operation; which *Mrs. Morlai* repeated rather after him than from her own judgment. But I estimated it at above three inches, from the difficulty I found in touching the projection of the *sacrum*. To confirm this estimation, I successively used the *calipers*, and *M. Coutouly's pelvimeter*. The first measured a space of seven inches and a quarter externally, from the top of the *sacrum* to the middle of the *mons veneris*; and the second was developed internally
and

and in the same direction, to three inches two lines, without much difficulty. *M. le Roy* and *M. Philipp*, ex-dean of the Faculty, appeared convinced that the *pelvis* had the dimensions I had assigned it, and it was resolved that an account of it should be drawn up to be sent, like the first, to *M. Andouillet*, who was to transmit it to the minister. The two physicians not having time to draw it up on the spot, *M. le Roy* undertook to do it in the course of the day; but I could not obtain a sight of it *.

2061. The fifth woman of whom we are to speak had the operation performed on her the 24th April 1785, in the *rue des Boucheries fauxbourg St. Germain*. My brother and I were present at the operation. I contented myself with stating that the *pelvis* was narrower than that of the lady who is the subject of the preceding case, and that the child would run a very great risk, whether it were brought by the feet or otherwise. *M. le Roy* had estimated the *pelvis* at three inches or thereabouts; and the *pelvimeter* of *Coutouly*, applied during an instant of pain and agitation, had given the same

* I informed the King's surgeon of it, the same day, by a letter containing the detail I have just stated.

result, within a line or two. Being of opinion that the *pelvis* was so little contracted, we should have observed, a while, the effect of the pains, if the cord had not presented below the head, so far as to form a loop in the *vagina*; but the presence of that rendered the circumstance exceedingly pressing, and it was necessary to operate. I saw inconveniences for the child in all the known methods, except the Cæsarean operation; *M. le Roy* was certain he should preserve it, as well as the mother, by the section of the *pubes*, and seemed only to regret that the circumstance was not more favourable for convincing us of its great advantages; that is to say, that the *pelvis* was not narrower. He did preserve the child, but the mother died of the consequences of the operation itself, before the end of the eighth day.

2062. The external incision was pretty short at first, and after delivery appeared only six or eight lines long. The *symphysis* was cut from top to bottom; but the section was made with great difficulty; they were forced to attempt it a great number of times, and to act as with a saw, and also to press strongly on the back of the *scalpel* with the right hand, for it was held with the left. The resistance it gave
made

made me presume that the instrument was directed on one of the bones, and, in fact, the section was made in the left *os pubis* at the distance of two lines or thereabouts from the *symphysis*, as may be seen fig. 1, plate XVII. which I caused to be engraved from the *pelvis* itself, which I still preserve in my cabinet. The section was scarcely finished, before the bones separated a little, and their separation was announced by a slight sound like that of unbending a spring. At that instant we saw the blood flow in form of blackish waves, and thick enough to fall in lumps on the neighbouring parts; so that in less than two minutes she lost four or five porringers at least: it was venous blood.

2063. Being placed on the left side of the woman, I attended both with my finger and eyes to the separation of the bones, which went on gradually during the introduction of the hand into the *uterus*, but suddenly at the time the child's breech passed the *strait*: at that instant we again heard the sound like a spring and of tearing towards the left *sacro-iliac symphysis*. The separation did not at all augment during the passage of the head, and remained the same after delivery, till the woman's knees

were raised up and brought together. Entirely attentive to this point of the operation, I can affirm that the separation was not carried beyond two inches wanting one line, having measured it with a statute rule after the exit of the child, under the inspection of the operator, and being very certain that it had not varied. It was almost entirely produced by the *deplacement* of the left *os pubis* which retired far under the *teguments*, while the right *os pubis* receded but a few lines, and on that account appeared the more salient. Although much inferior to the separation I was assured had been obtained in the preceding cases in which the consequences were so slight, I could not dissemble my fears of the danger to which the woman was exposed: but the doctor did every thing in his power to encourage me.

2064. An acute pain was felt in the back of the *pelvis* and of the left thigh, extending to the ham, at the instant this great separation took place, and continued till her death. Another, not less acute and pungent, attacked her from the first day towards the right *iliac* region, the belly presently swelled, and appeared almost as high before the end of the first twenty-four hours, as it had been during the state

state of pregnancy; the fever soon arrived at its greatest height, &c. &c.

2065. On opening the body the disorders were found excessive. The left *labium* was very much swelled and livid; the *sacro-iliac symphyses* were of a brownish colour to the extent of an inch at least, on account of the blood extravasated under the *periosteum* which was detached from them; they were overflowed with a purulent and ichorous discharge, more abundant on the left side than on the right, and which sprang from the bottom of them, through several openings which were so many rents, whenever the *ossa ilia* were moved and pressed towards the *sacrum*; the left *symphysis* was open five lines, and the right only three; a gangrenous abscess was seen on the right side behind and above the *acetabulum*, which extended to the anterior and inferior part of the *uterus*, where there was an eschar of the same nature; an ulcer also gangrenous and in form of a chink was observed in the posterior part of that *viscus*, from the upper part of its neck to the insertion of the ligament of the *ovarium*, and it penetrated into its cavity. Those who assisted at the opening of the body will not reproach

proach me with having overcharged the picture of these internal disorders *.

2066. The diameter of the *pelvis* was two inches and an half from the *pubes* to the base of the *sacrum*; five inches from one side to the other; and four and an half from one *acetabulum* to the *sacro-iliac* junction of the opposite side. The section had been made on the left *os pubis* which is cut clean and without the smallest notch †.

2067. I have stated that the child came alive, but weak and fatigued; it presented nothing remarkable in its size; its head flexible and supple was only four inches two lines in diameter, from the middle of the forehead to the *occipital tubercle*, and three inches five lines from one *parietal protuberance* to the other.

2068. After Messrs. *Sigault* and *Alph. le Roy, M. de Cambon* ‡ has practised the section of the *pubes* most frequently, and seems to have done it with the most advantage: but like

* Half a score persons, among whom was *M. le Roy*, signed the account of it, which was drawn up on the spot.

† I have the *pelvis* in my collection.

‡ First surgeon to her Serene Highness the Duchess of Lorraine and Bar, at *Mons.*

them

them he could not preserve all the children nor all the women whom he undertook to save. Of the three whom he mentions, one underwent it twice; viz. the 28 March 1778, and in January 1780. *M. de Cambon* does not determine what degree of separation he obtained in the latter case, but contents himself with saying that it was so large that the woman was able to deliver herself without farther help and in a few minutes, of a large girl in perfect health; but he affirms that it was two inches or thereabouts the first time, though he could not save the life of the child. *M. Knap* *, who has communicated some good reflections to me concerning these two facts, assures me that he delivered this same woman of her first child by the help of the forceps, though it was very large, and that he did it in presence of *M. de Cambon*; that *M. Williame* found no more difficulty in delivering her of a second, which he did because the umbilical cord was without. Nothing in this denoted a great deformity in the *pelvis*, and the relation of *M. de Cambon* himself confirms me in the opinion that its deformity is not very remarkable. Another

* Surgeon accoucheur at *Mons*.

woman big of her first child is the subject of the third observation of the same author. Here it was the impossibility of passing the hand through the inferior *strait* contracted by the approximation of the *ossa pubis* and *ischia*, which determined him to have recourse to the section of the *pubes*. He obtained a separation of two good inches; the child's head immediately descended into the *pelvis*, presenting the face to one side, and, not being able to pass out, he extracted it with the forceps: he preserved both mother and child. *M. de Cambon* says nothing farther concerning the deformity of the *pelvis*, and only determines the extent of it by the impossibility of introducing his hand into it. But the following case, which could not be comprised in the same bundle of observations*, seems well calculated to prove that this *pelvis* was not much deformed, and that the separation of the *ossa pubis* was not so great as the author states.

2069. The woman who is the subject of this fourth observation, was deformed, and

* This case is posterior to the letter which contains the three first observations of *M. de Cambon*, addressed to *M. Brambilla*, first surgeon to his Majesty the Emperor Joseph II.

only three feet high. A midwife and two accoucheurs, *M. Knap* and his pupil, had already in vain attempted to pass the hand into the *uterus* to turn the child who presented the head, preceded by a loop of the cord ; the forceps had been applied with as little success, the cause which had obstructed the introduction of the hand not permitting the head to descend ; the instrument had been left on the head while they waited for other accoucheurs who could succeed no better ; being certain of the child's death, as well as of the deformity of the *pelvis*, *M. Knap* had just proposed the use of crotchets, when *M. de Cambon* arrived, and insisted on substituting the section of the *pubes*, hoping to obtain the same success as in the former women. Being more laborious than was expected, the *scalpel* passed into the hands of three persons successively before it was finished. The separation at first was estimated at two fingers breadth ; but it suddenly extended to four, and with a remarkable noise of tearing, at the instant the head, brought along by the forceps which had been re-applied, cleared the superior *strait*. No one was surprised to see the child born dead, well convinced that it was so before, but they did not think

think the woman would sink; before the end of the sixth day, under the inevitable consequences of so great a separation as that they had just obtained. A collection of sanious and ichorous matter, arising from the right *sacro-iliac symphysis* which was open seven or eight lines, overflowed all the *iliac fossa* of that side, as well as the cavity of the *pelvis*, and extended under the crural arch as far as the articulation of the *femur*; the left *symphysis* had only suffered a violent extension; the *pelvis*, regular in its form and its internal *contour*, had but two inches and some lines in diameter from the *pubes* to the projection of the *sacrum*, &c *.

2070. The success obtained by *M. Van-Damme*, surgeon at St. Omer †, *M. Verdier-Duclos*, a physician at *la Ferté Bernard* ‡, by *M. Damen* at the *Hague* §, *M. Despres de*

* I had this *pelvis* twelve days in my possession, when *M. Knap* made a journey to Paris a few weeks after the death of the woman: it is two inches seven lines in the small diameter.

† The 30 June 1779, on a woman of the village of *Racquenghen*, two leagues from St. Omer.

‡ The 20 January 1786.

§ The 20 October 1783, and the 11 August 1785.

Menneur, near *St. Paul de Leon* in *Bretagne* *, that mentioned in the *Madrid Gazette* 24 November 1780 †, another mentioned by *M. Lauverjat* ‡, and doubtless many others which are unknown to me, may be referred to the same class as those I have already mentioned: for we find but trifling marks of deformed *pelvis* in the women who are the subjects of these observations, almost all having been delivered naturally before the time when they were subjected to the operation, or have been safely delivered since. In all of them, as in the preceding observations, it was the event of some difficult labours, or the fruitless application of the forceps, which determined them to recur to this new method; they obtained from it what they could not obtain from the forceps applied before the operation, only because it renders the *pelvis* naturally large enough, still larger, and because that excess of size frees them from the necessity of method. The unskilful think it preferable, because its execution is often easier to them than the application of

* The 21 February 1778.

† The 9 August 1780.

‡ Nouvelle Méthode de faire l'Opération Césarienne, page 292.

other means, which generally requires an extensive knowledge.

2071. The woman who is the subject of *M. Van-Damme's* observation was the mother of three children at the time she was subjected to the section of the *pubes*, and those three children were healthy; though their birth, according to the report of that surgeon, had been a little laborious. That of the fourth only became more so, because its head did not present so favourably as those of the others had done, being situated so that the face, turned to one side, regarded the right *os pubis*. *M. Van-Damme* finding it fixed, and concluding that it could not descend farther, from the time the woman had consumed in fruitless efforts, endeavoured repeatedly to take hold of it and extract it with the forceps; and afterwards to push it back in order to find the feet: which was also done with as little success by two other accoucheurs whom he fetched from *St. Omer*. The section of the *pubes* was performed, which procured a separation of an inch and an half; the forceps were again applied, and more fortunate, only because the passage was then larger, they extracted the child, whose head in all parts presented marks of the abuse that

that had been before made of the instrument: it died three weeks after its birth in consequence of those bruises; but the mother recovered after being some time in a very alarming state.

2072. *M. Van Damme* cannot exculpate himself from having made an ill use of the forceps in this case; and it is an afflicting circumstance, that he is not the only one who has had recourse to the section of the *pubes* on whom we may cast the same reproach. He does not say how he placed them on the child's head, but the bruise which he observed near the *coronal suture* on one side, and that which he saw near the occiput on the other, under which that large tumor formed which they were obliged to open in a few days, clearly denote that the blades grasped the head obliquely from the forehead to the *occiput*, and from the right to the left side. This relation between them and the head is moreover inevitable when the head is in that situation, if the blades are applied at the sides of the *pelvis*. This case, which is not very rare, is one of those where the greater part of accoucheurs substitute a blind *routine* for knowledge and method, and augment the obstacles in propor-

tion to the force they employ to overcome them; so that a head which would easily have cleared the *pelvis* if well directed, cannot pass it at all unless it be very large. This is a truth which I have often demonstrated on the machine, in order to fix it more deeply in the minds of my pupils, and one of them has assured me that he had convinced *M. Van Damme* his countryman of it, a short time after the operation I have just related.

2073. The section of the *pubes* does not seem to me to have been more necessary in the woman who was twice subjected to it by *M. Damen*; because the deformity of the *pelvis* is no better demonstrated in this double case than in that of *M. Van Damme*. The surgeon of the *Hague* estimated the diameter which goes from one *ischium* to the other, at three inches only, and the largest which went from the *pubes* to the *sacrum*, at four inches. There was then no defect of size but in the inferior *strait*; and that defect also was in the direction in which it is most difficult to estimate it, and even to discover it; and in that also which is most favourable to the new operation. This fault depending on the small interval between the *ossa ischia*, is too rare for us to believe *M. Da-*

men had met with it, and its shades too difficult to calculate to suppose he had done it with precision. If he had, how came it that M^{rs}. Camper and Van de Laar found this *pelvis* contracted only in the superior part? It seems also that it was nothing but the event of the two former labours which were terminated with the crotchet, that decided him in favour of the section of the *pubes*, in the third; as the success of it in that case determined him to practise it again, to save the life of the fourth child. It was by means of a separation only large enough to admit the finger, that he obtained that advantage for one of the children, and by a separation twice as large, that he procured it for the other: it each time gave but little pain to the mother, and she recovered quickly.

2074. The case published by the physician of *la Ferté Bernard* would appear much more extraordinary, if it was not preceded here by the analysis of that of *du Belloy*, whose *pelvis* had also been estimated at eighteen or twenty lines in the small diameter; if the example of *Vespres*, that of the fifth woman on whom it was performed by *M. le Roy*, and since that, the event which followed the same operation in

her who is the subject of the fourth observation of *M. de Cambon*, had not unanswerably proved the danger of the section of the *pubes*, in cases where the deformity of the *pelvis* renders delivery impossible by the natural passage. *M. Verdier-Duclos*, who only admits that the diameter was twenty-one lines, affirms that the child's head was so engaged in it that he could not move it with the forceps applied two different times at the sides of the *strait*, nor push it back with the hand to search for the feet, whatever force he used. A separation of two inches two lines between the *ossa pubis*, gives that diameter a sufficient extent, and the woman delivers herself without farther help, of a child whose head was twelve inches six lines in circumference passing over the *parietal protuberances*, and consequently four inches two lines in diameter from one of the *protuberances* to the other. *M. Verdier-Duclos* doubtless would not have contented himself with stating so limited a separation, if he had been acquainted with the observations of *M. le Roy*; for he would have perceived that it must be carried beyond three inches to render such a *pelvis* accessible to a much smaller child than that he speaks of, since the head of *du Belloy's* child

child was but three inches eight lines. The latter, indeed, lived fourteen months, and that of *M. Verdier* died almost as soon as it was born. Those practitioners who dare not decide upon this case, from the detail its author gives of it, and the analysis of the preceding ones, may consult the learned and judicious reflections of *M. Desgranges* *.

2075. The woman who is the subject of the observations of *M. Després de Menneur*, would present an example of a still more extraordinary success than that of *M. Verdier*, or even of *M. le Roy on du Belloy*, if it were not demonstrated by two deliveries after the section of the *pubes* had been performed, that it was less necessary still than in those women †; and by the fact itself, that it was not done completely. Like the two practitioners whom I have just quoted, the surgeon of *St. Paul de Leon* meets with a *pelvis* of only eighteen or twenty lines diameter superiorly, and renders

* *Journal de Medecine de Paris* for the month of May 1788. *M. Desgranges* has not manifested less knowledge in the discussion of a great number of other facts relative to the section of the *pubes*.

† This woman, on whom the operation was performed the 21 February 1788, was delivered naturally the 10 July 1779, and more naturally still the following year.

it spacious enough for the passage of a large child, without the mother's suffering the smallest accident. What is more astonishing than in the case of *M. Verdier*, is that notwithstanding this small opening, the child's head preceded by a hand, was advanced so far as to appear at the *vulva**; not by lengthening as in the latter, but without suffering the smallest alteration in its form and dimensions. *M. Després* armed himself with the forceps to extract it, when the success recently obtained on *Souchot* came strongly into his mind, and led him to prefer that operation to the instrument. He executed it instantly, and almost with a single stroke of the bistoury; though in an obscure place, in a recess or kind of closet, which served the woman either for a chamber or a bed. He executed it with celerity and certainty, though her mother, roused by the cries of the daughter, seized him by the arms at the instant he was cutting the *symphyfis*. The section was scarcely made, before the child, pushed down by the pain, entirely cleared the passage; but it was already dead. Its mother, more fortunate, gets up from the first day, goes out of her closet on

* This assertion is taken from a letter of *M. Després de Menmeur* to a surgeon of his acquaintance, who caused it to be communicated to the Academy.

the third, and being then surpris'd in a corner of the fire-place by *M. Després* who came to dress her, she gets up quickly and without any help, into her bed rais'd ten or twelve steps above the floor*. The partisans of the section of the *pubes*, less prejudiced now than at first, doubtless would not dare to avow such a tale at present; and if they knew the accounts the Academy of Surgery has received concerning it, they would take care to erase it from the list of those they have published†.

2076. A woman of *Batigny* on whom the operation was performed by *M. G.* and who was immediately delivered with the forceps, has also furnished since the most complete proof of the inutility of this operation, and the abuse made of it; since she was delivered the following year so suddenly that her midwife could not get to her time enough to receive the child. There is reason to presume that the woman on whom it was performed under

* See those details in *Les Recherches Hist. & Pratiq. sur la Section du Pubis*, par. *M. le Roy*.

† The woman, who submitted to the operation only in expectation of a pecuniary recompence, has declared that she did not keep her bed a moment: a circumstantial detail of it, well attested, has been sent to the Academy of Surgery.

the inspection of the vice-president of the College of Surgery at *Cadiz*, by a student of that college in 1780, may have given the same signs of fecundity, and will not be less happily delivered; for the consequences of the operation confirm me in the opinion that her *pelvis* is not more deformed than those of other women.

2077. After the glaring proofs of the inutility of the section of the *pubes* in the greater part of the women I have mentioned, and the abuse that has been made of it in a very few years; after those I have already given of its insufficiency and danger, in those cases where the extreme defect of the *pelvis* renders delivery impossible, on what basis will its defenders establish its pre-eminence over the Cesarean operation? Will they quote the case which happened at the city of *Arras* published by *M. Retz* *; that of *M. Siebold* already mentioned †; that of *M. Nagel* ‡, of *M. Guerard* §, of *M.*

* At *Arras*, the 24 April 1778.

† *Wisbourg*, the 24 February 1778.

‡ Surgeon to the Prince Bishop of *Spire*, the 5 April 1778, and announced in the *Francfort Gazette* the 11 of the same month.

§ At *Dusseldorf*, the 10 May 1778.

Bonnard *, of *M. Duret* †, of *M. du Chauffoi* ‡, of *M. Riolay* §, of *M. Lavaguigno* ||, of *M. de Matthiis* ¶, of *M. V.* †, &c. &c. ? No one is ignorant that in almost all these cases the mother or child have been the melancholy victims to it. What farther proof can be desired ?

2078. The woman on whom it was performed in the city of *Arras* died before the end of the third day, and her child gave so few signs of life, that they could not venture to affirm it was baptised living. The woman at *Wisbourg* suffered the most disagreeable consequences, though the bones were separated only fifteen or eighteen lines, and she was indebted

* Surgeon at *Hesdin*, the 12 February 1778.

† Surgeon of the Marine Hospital at *Brest*, the 12 February 1779.

‡ Principal surgeon of the great *Hotel-Dieu* of *Lyon*, the 5 December 1781.

§ Surgeon accoucheur at *Pimpol* in *Bretagne*.

|| Collegiate surgeon at *Gênes*, and then on duty at the Hospital, the 29 December 1782.

¶ Surgeon in the army of the King of *Naples*, then at *Paris*, where he performed the operation the 17 April 1785.

† *M. V.* . . . surgeon at . . . who attended my lectures in 1786, communicated the case in question to me, desiring me at the same time not to make him known as the author.

for her preservation to the prudence and sagacity of *M. Siebold*, who dared not extend the separation farther; certain, from numerous experiments, that it would infallibly be mortal. Notwithstanding these fifteen or eighteen lines added to a *pelvis* which had already thirty-three in its diameter, it was necessary to compress the child's head strongly, and even in some measure crush it, to procure its exit. In the case of *M. Nagel*, it was an *exostosis* of the base of the *sacrum*, which advanced several inches into the *pelvis*, which determined him to perform the section of the *pubes*. The degree of separation it procured is not stated; but it seems not to have been carried farther than an inch and an half. The child was turned, and quickly extracted, notwithstanding the difficulties still to be surmounted: it gave no signs of life but during the first quarter of an hour; and the mother died before the end of the eighth day. It was the day after the death of the woman and eight days after that of the child, that the *Francfort Gazette* announced that the operation had had the most happy success. On opening the body, the *exostosis* which had determined *M. Nagel* to operate, was not found; but they found a *pelvis* of only three inches

inches diameter. The *sacro-iliac symphyses* were very moveable, the external parts of generation, the lips of the wound, and the posterior part of the *uterus* were gangrened, and the neighbouring cellular membrane was filled with an *ichor* extremely fetid. *M. Frank*, physician and privy counsellor to the Prince Bishop of *Spire*, who published this case, observes that the woman had been lately delivered of her last child, and that she had had several born alive.

2079. The woman who was the subject of *M. Guerard's* observation was much more deformed, since on opening her body, the *pelvis* was found to be only two inches six lines. The accoucheurs not being able to agree concerning the necessity of the operation, and one of them thinking the child might be extracted without that extraordinary aid, they sought for one of the feet which presented in the neighbourhood of the neck of the *uterus*, and which could not without difficulty be brought into the *vagina*. Many fruitless efforts were made, both to bring along that foot, and to search for the other; and it was not till after those efforts that the section of the *pubes* was performed. Although it produced a separation of an inch
and

and an half or thereabouts, the extraction of the child was not at all facilitated; every thing that art could suggest was tried, but all in vain. They first pulled off the left leg, and pushed back the dismembered thigh into the *uterus*, in order to clear the way to the other extremity which they could not bring down, though *M. Guerard* and two other accoucheurs laboured at it one after the other. The head seeming inclined to come, they waited, in the hope that it would engage; but being deceived in that expectation, they opened the *cranium*, evacuated the brain from it, and successively applied both the forceps and crotchet. They could only get away some pieces of it with a sort of nippers, and the rest appeared immovable: Nature however expelled it, after five hours rest. This operation, begun at one o'clock in the afternoon, was not finished till about nine in the evening, and the woman survived it eleven days.

2080. The conduct of *M. Bonnard* will appear much more prudent: not having been able to cut through the *symphysis* of the *pubes* which appeared to him to be ossified, and thinking it would be in vain to do it, on account of the state of the *sacro-iliac symphyses*, which must,
says

says he, have been equally hardened, he determined to have recourse to the Cefarean operation, which he affirms he performed in two minutes. He preserved the child which was very large; but the woman died in a few days. Though we cannot attribute her death to the section of the *pubes* which was but begun, it is not less certain that the preservation of the child was owing to the Cefarean operation: the diameter of the *pelvis* having been estimated at only two inches, and the section of the *pubes* hitherto presenting no example of success in such a case.

2081. The case at *Brest*, communicated to the Academy by *M. Duret*, is not less alarming than that at *Spire*, at *Dusseldorp*, and several others which I shall mention; though the woman did not sink under the disagreeable consequences of the operation. A labour already very long, an *exostosis* of the size of a walnut, situated at the right lateral part of the *sacrum* above its union with the *coccix*, several fruitless applications of the forceps *, though

* A contused wound at the right lateral part of the coronal *future*, and another at the posterior part of the left temporal region, demonstrate too clearly that the forceps were ill applied each time, to make any farther proof necessary.

the head was lengthened and engaged as far as the middle of the *pelvis*, were the motives which determined the accoucheur to perform it. A separation of an inch was obtained instantly, and it extended to three fingers breadth when the head, on which the forceps were again applied *, passed the superior *strait*. At that time the external wound lengthened in such a manner towards the *vulva*, that it was only separated from it by a kind of bridge two or three lines broad, which ulcerated in the first two or three days; so that after that time, those two openings formed but one, which a rent in the *perinæum* made still larger. The child gave no sign of life: but the woman exists, overwhelmed with infirmities which proceed from the operation. After being treated at home sixty days, she was sent to the poor-house, where she passed another month in bed, but without being cured. The *ossa pubis*, the extremities of which exfoliated, are not united, and are still separated more than half an inch; the bladder, a great portion of the anterior part of which is

* Even then it was not without repeated applications of the instrument, and the most violent efforts, that the head was extracted.

destroyed

destroyed by a gangrene, and the *vagina*, which is in the same state, form between them a sort of hernia, from whose surface the urine continually distils by two openings which seem to be those of the ureters. The woman has moreover a descent of the *uterus* and of the *vagina* as big as the fist *.

2082. Though the object of all the practitioners of whom I have hitherto spoken was to preserve both mother and child by the section of the *pubes*, *M. du Chauffoi* seems to have preferred it to the Cæsarean operation, only because he had the greatest certainty of the child's death, the latter appearing to him too dangerous for the mother: but the event soon proved to him that the new operation was not less so, when the deformity of the *pelvis* is extreme. It was difficult, because the instrument did not hit the *symphysis*, but went on the right *os pubis* two lines from it, as *M. le Roy* had carried it on the left *os pubis*. At first there was only a separation of ten lines, which was gra-

* These details posterior to the observation of *M. Duret*, were communicated to me by *M. de Rougemont*, then principal assistant surgeon, and demonstrator in the Military Hospital at *Brest*.

dually augmented to two inches seven lines. He then applied the forceps again and again, but always without effect, and finished at last, by turning the child, which had been a long time dead, to extract it by the feet. The mother followed it to the grave fifty-two hours after the operation, and the opening of her body displayed the same disorders as had been found in the other women who had sunk under the section of the *pubes*. The small diameter of the superior *strait* was but one inch seven lines.

2083. The woman on whom *M. Riollay* performed the operation survived it a much shorter time than the patient of *M. du Chauffoi*, though the operation and the extraction of the child had been more easy; for she died an hour and an half afterwards, in a third paroxysm of *syncope* *. The surgeon had estimated the diameter of the *pelvis* at only two inches eight or nine lines, by the application of *M. Coutouly's pelvimeter*; but on opening the body it was found to be three inches: while the distance from the point of the *coccyx* to the inferior edge

* *M. Riollay* sent me the case at the time, for the Academy of Surgery, as well as the *pelvis* of the woman, which I still have in my collection.

of the *symphysis* of the *pubes* was but two inches four lines. The separation of the bones was carried to two inches and an half; the child, turned and brought by the feet, was dead, and without doubt had been so some time, being already covered with vesicles; its head was three inches nine lines in the small diameter. From the moment when the greatest separation of the bones was made, to that of her death, the woman never ceased to complain of excruciating pains towards the loins, and especially on the left side, where the *sacro-iliac symphysis* was found torn and open four or five lines, while that of the right side was open only three or four.

2084. The section of the *pubes* performed in the Hospital at *Gênes* had no better success. The surgeon imagining the child was dead, extracted it with the crotchet, but brought it alive, and it lived several hours. The woman did not die till the thirtieth day after the operation. On examining the body, the *ossa pubis* were found separated two fingers breadth; the external parts of generation, as well as the *uterus* and *vagina* were gangrened; and the small diameter of the superior *strait* was but two inches five lines.

2085. The case by *M. de Matthiis* is not that of the woman named *Huguet*, and which was published in his name, par. 2058. The author would have been in more haste to make it known if it had resembled the latter. The woman * who is the subject of the case in question, had had three children before. She was delivered naturally of the first, which lived to the age of fifteen months: but the second was extracted by the feet, and the third by means of the crotchet; the latter by a student in surgery, and the former by a surgeon who confesses he was an absolute stranger to midwifery. *M. de Matthiis*, whom a midwife caused to be called in at the fourth labour, estimating the diameter of the *pelvis* at only two inches three quarters, thought the section of the *pubes* was the only method that ought to be employed. He performed it, after having waited some time for *M. le Roy*, my brother, and me, whom he had sent for to the consultation; thinking a longer delay would render the operation fruitless for the child, because a loop of the umbilical cord was without. He found in this case,

* Marie Rouillé, rue Plumet, in the fauxbourg St. Germain.

how much difficulty as well as danger there might be in this new operation. The instrument having quitted the vertical line of the *symphysis*, either before or after the section of it was made, fell on the descending branch of the right *os pubis*, and cut it clean through transversely, at six lines or thereabouts below the *symphysis*: as represented fig. 2. pl. XVII. But to cut it thus, he was forced to use the greatest force, and it was not till he had hacked a long time in other places that he thought he had done it; for beginning to saw again at about half a line from that section, he notched the instrument deeply in two places, and left its fragments sticking in the bone, where they may be still seen. Thinking the operation finished *, *M. de Matthiis* introduced his hand to search for the feet, while two assistants separated the thighs with so much force, and especially the right which was committed to a robust person, that the heads of some of the muscles attached to the branch of the *os pubis*

* There is some reason to think the section of the *symphysis* was not entirely made then, nor till after her death. The partisans of the operation would perhaps not be displeased with *M. de Matthiis* if he should avow it.

and of the *ischium* were partially torn. Having only been able to bring down the right foot, he pulled at that, and by the help of a great deal of force, extracted the child. A chain of singular mistakes, without which the child would have escaped my notice, caused it to be left at my house, where I examined it in presence of several persons, who thought it proper that a particular account of it should be drawn up. It weighed five pounds and a quarter; its head was three inches and a quarter in the small diameter; but having been in some measure crushed in passing the *pelvis*, we could easily compress it six lines farther between the branches of the *calipers*. The right thigh was fractured in the middle, and the left arm below the insertion of the deltoide muscle *. This child, which was very brisk at the time when its foot was brought down, gave no sign of life after its exit. The mother was scarcely delivered of it, before she fell into an alarming state of suffocation; had some slight convulsions, and complained of acute pains in the

* *M. de Matthiis* and *M. Rossignol*, a surgeon who assisted him, not knowing that the child had been brought to me, would not agree to these facts till I offered to produce the proofs.

loins and the left thigh, which continued till her death : which happened on the ninth day. The opening of her body *, performed in presence of several physicians and surgeons, demonstrated incontestably that she died of the consequences of the operation. The detail of all the circumstances would be too long; I shall only say that *M. de Matthiis* was so affected at the sight of such a train of disorders, that he found himself ill and fainted away : if the grief which he testified for it was not feigned, we may be assured he will not be in haste to repeat this operation, on account of which, he confessed he had been strangely abused. I must observe that the small diameter of the *pelvis* was but two inches six lines. I keep this *pelvis* with that of the fifth woman on whom *M. le Roy* performed it, and that which was sent me by *M. Riollay*.

2086. An *exostosis* which had arisen on the first false *vertebra* of the *sacrum*, to that degree as to leave only eighteen or twenty lines in the small diameter of the superior *strait*, determined

* It was begun clandestinely in the night, and suspended by the arrival of an unexpected person who would not permit it to be continued : but it was afterwards proceeded on in the most authentic manner.

M. V. . . . to perform the section of the *pubes*, in the month of November 1783, on a woman who had been delivered some years before of a child dead and putrid : but he did not attempt it till he had applied the forceps several times, and had searched for the feet, and brought down the *trunk* entirely, the child being dead, and the woman expiring. It was begun with a razor, and finished with a common knife sharpened on a stone, not being able to procure any other instruments. It was scarcely cut through before the child's head, the only part which could not be extracted, cleared the *strait*, and the woman died. *M. Brodiblag junior** also furnishes an example of the too frequent abuse of this operation ; but of another kind, and on which I shall make no remarks ; having already far exceeded the limits within which I wished to confine this article. The woman who is the subject of his observation had already had two children ; and it was not till after having amputated the arm of the third, which was declared to be dead, that the operation was performed. The bones separated two inches, says the author, and the de-

* Journal de Méd. tom. lxxiii. for the year 1785, p. 219.

livery was terminated without farther help an hour and an half afterwards: the woman was perfectly well in twenty-two days. I have not been able to procure any information of the case which happened at *Naples*, in which it is asserted the woman died of an hæmorrhage*.

S E C T I O N . IV.

Consequences to be deduced from the Experiments and Observations which are the Subject of the two preceding Sections.

2087. THOUGH the section of the *pubes* has been thought more simple, more easy and certain than the Cæsarean operation, at a time when experience had not yet demonstrated the difficulties it might present, and the dangers that might follow it, ought we to think the same of it at present? How many times already has it not been necessary to have recourse to the saw to separate the *ossa pubis*, and how

* See *M. Lauverjat*, New Method of performing the Cæsarean Operation, p. 252.

often has it not been found impossible to procure any distance between them after the separation? How often has this operation produced a free passage for the child, whose preservation ought necessarily to enter into the plan of the operator, as well as that of the mother; and constitute a part of its success?

2088. This new operation will appear more simple and less painful than the Cæsarean, if we only consider the extent of the incision, and the nature and importance of the parts concerned in it: that is an indisputable fact. It is only the *teguments* and the fat which is divided, at most only two inches and an half, and the *symphysis* of the *pubes*; there are usually only small vessels cut, incapable of furnishing much blood, and the instrument does not touch the *uterus*; the child comes into the world by the way that Nature intended, and which the section of the *pubes* renders more or less accessible; there is no considerable hæmorrhage to be feared, nor those extravasations of milky and purulent matter which almost always mortally injure the interior *viscera* which they fall upon; there are no absolute difficulties in the execution of this operation but what arise from the intimate consolidation of the bones; and
it

it no way exposes women to subsequent hernias which have been so frequently seen after the Cæsarean operation : this is the idea which its partisans have had of it, and which the greater part of them still entertain.

2089. But the section of the *pubes* seldom procures the child an easy exit ; for hitherto the greater part have died in the passage, or have been victims a few minutes after their exit, to the efforts necessary to effect it *. When the separation of the *ossa pubis* has been made, it has not always been possible to remove them from each other, on account of the consolidation of the *ilia* with the *sacrum*, and this case, which does not seem to be exceedingly rare and which cannot be known till after the operation, renders it fruitless, and cannot dispense us from the Cæsarean operation.

2090. If we reflect ever so little on the danger to which the child is exposed in a preter-

* Out of thirty-three operations thirteen children have been saved †, and the others are all dead. Though some of them were so before, others have died during their extraction. It is remarked that those who have been preserved belonged to the women whose *pelvis* were the least deformed.

† We are ignorant whether that at Naples was preserved or not.

natural labour where we are obliged to bring it by the feet, and on the small number that then escape death, when the mother's *pelvis* has not, pretty nearly, all its natural dimensions, we discover another source of accidents, which accompanies the section of the *pubes*; and which we doubtless should diminish, if we could commit the expulsion of the child to the contractions of the *uterus*, or take hold of the head with the forceps, as some practitioners have already done: but, except in that very small number of cases, the child has always been extracted by the feet, whether the head presented, or not.

2091. Though this operation very seldom secures the child's life, even when the *pelvis* is not excessively deformed, it is not then always exempt from the severest consequences to the mother. The death of both is certain when that deformity is extreme*. The consequences
of

* The section of the *pubes* has had disagreeable consequences not only in this case, but in others where the separation of the *osssa pubis* has been carried beyond an inch and an half, though the *pelvis* was only moderately contracted. Of the thirty-three women I have mentioned, twelve evidently died of the consequences of the operation: I do not reckon her who is the subject of the observation of *M. Bonnard*, surgeon

of a spontaneous separation of the *ossa pubis*, and of the *ossa ilia* and *sacrum*, in some natural or laborious labours, long since announced those which might be expected from this new operation; the example of *Vespres*, those of the fifth woman on whom *M. le Roy* performed it, the fourth by *M. Cambon*; that at *Arras*, at *Dusseldorp*, at *Spire*, at *Lyon*, at *Gênes*; that by *M. Riollay*, by *M. Matthiis*, &c. have proved that it was not without cause that those accidents were dreaded. A devastation in the external parts and the neck of the *uterus*; an inflammation and gangrene of that *viscus*; collections of purulent, sanious and putrid matter in the cellular tissue of the *pelvis*; a *hernia* of the bladder between the *ossa pubis*; *echimoses* along the *psoæ* muscles; injury to the canal of the *urethra*; incontinence of urine, and gangrenes more or less profound, &c. form the group of accidents of which this new operation is susceptible. Granting that those of the Cesarean operation are as formidable for the mother, at least it presents a certain resource,

geon at *Hesdin*; since the section of the *pubes* was not completely made. Among the other twenty, the greater number had been delivered naturally before, or have been safely delivered since; and several have remained infirm.

exempt

exempt from every danger, for the child. Which of the two operations therefore ought to be preferred?

2092. Even if we could, without inconveniences to the woman, obtain a separation of two inches and an half between the *ossa pubis* after the section of their *symphysis*, the Cefarean operation would still be the sole resource in cases of extreme deformity of the *pelvis*; the section of the *pubes* cannot enter into comparison with it, except when the small diameter of the superior *strait* shall have, at least, an extent of two inches and an half. Though I suspended my judgment, at the time I published my first edition, concerning the preference to be given to one of these two methods, in the latter case, till I could procure more positive information of the innocence or danger of so considerable a separation; though I required that men who had no interest in vaunting this new method to the detriment of the former; in one word, that its adversaries, should have seen a separation of two inches and an half, without a rupture of the *sacro-iliac symphyses*, and without inconveniences, to make me adopt this new operation; at present, better informed on all these points, I am
not

not afraid to reject it, and to affirm that no one has ever separated the *ossa pubis* two inches and an half, without destroying the life of the woman. It has had no success but when it has been performed on *pelvis* at least two inches three quarters in the small diameter, and when the separation has been limited to much less than the point to which they fancied it was carried; in those cases, in fact, where it was absolutely useless; the *pelvis* being larger still, for I have found it to be more than three inches in some of the women. The section of the *pubes* cannot at present maintain any comparison with the Cæsarean operation; at most, it might be substituted for the forceps, in some particular cases only: for it cannot, without great inconveniences, give the *pelvis* an increase of more than two lines from the *pubes* to the *sacrum* superiorly; and that instrument may, without danger, reduce the diameter of the child's head as much. But what practitioner would prefer a new operation, which seems to be surrounded by rocks on every side, to one that has been crowned with a thousand successes? If we allow the former any advantages, they would never be more evident than in that species of locked head mentioned by *Roederer*,
where

where we cannot, says he, introduce any instrument between the head and the *pelvis*, at whatever part we attempt it; in that case, it would merit a preference over opening the *cranium*, the use of the crotchets, and the Cesarean section proposed by the same author: it would be preferable also, in cases where the inferior *strait* is contracted transversely, provided that a small separation were sufficient to give that diameter the necessary extent.

A R T I C L E IV.

Of the Cesarean Operation.

2093. THAT operation is called Cesarean, by which any other way is opened for the child, than that destined for it by Nature. Though for that purpose we sometimes only cut through the common and proper coverings of the *abdomen*, we are generally obliged to open the *uterus* also, and it is particularly in this latter case that the operation has received the name of Cesarean; for in the former it may be expressed simply by that of *Gastrotomy*.

It

It seems to me useless to distinguish it into *abdominal* and *vaginal*, as has been done lately; comprehending under that new denomination all operations performed on the neck of the *uterus*, without affecting the neighbouring parts: for we might with as much reason give the same name to incisions in the *perinæum*, to the section of bridles or cicatrices which narrow the *vagina*; to that of the *hymen*, tumors, &c. if the child could not be born without those aids.

2094. The origin of the Cesarean operation is too obscure, for us to be able to assign its epoch; that is to say, the time when it was first put in practice. Some have fixed it at the birth of *Julius Cesar*, and others have carried it farther back. I have already stated, that before the present age, the greater part of surgeons dared not perform it before the death of the woman; because they thought it essentially mortal. But care has been taken since to collect the most known and proper cases to cause it to be adopted, not as a certain resource for the woman in all cases where the deformity of the *pelvis* may obstruct delivery in an insurmountable manner, but as the only one which can be salutary. The collection of *M. Simon*,
inserted

inserted among the memoirs of the Royal Academy of Surgery, contains seventy or seventy-two of these cases, in which we observe that the operation has been performed with success; and we might at present add an equal number to them.

2095. Among the former we find some on whom it was performed without necessity, since the women had been delivered naturally before, or were safely delivered afterwards. This collection of *M. Simon* also teaches us that the greater part of these operations to the number of seventy and upwards were performed on a few women: some of them having submitted to it three or four times; others five, six, and even as far as seven times: which, if they were all true, would superabundantly prove that it is not essentially mortal, since there is no need of more than a single example to establish the proof of it.

SECTION I.

Of the Causes which require the Cesarean Operation; the Preparation necessary for it; the proper Time to perform it; and the Instruments and other requisite Apparatus.

2096. A DEFORMITY of the *pelvis* is not the only cause which may render delivery impossible by the natural passage, and which ought to determine us to recur to the Cesarean operation; certain affections of the soft parts which I have already mentioned, such as scirrhus tumors with a very large base, which cannot be extirpated without exposing the woman to a more imminent danger than that of the Cesarean operation, as well as *extra-uterine* pregnancies, may require the same assistance: but it would be abusing it to employ it in all the cases for which it has been lately recommended.

2097. This operation may be practised both on the living, and on the dead woman. If it requires a great deal of attention with respect to the former, so also we cannot entirely dispense with it in regard to the latter; because it is

sometimes very difficult to be immediately certain whether she be really dead or not. If we waited to perform this operation till the most certain signs of death manifested themselves, it would be useless to the child who cannot long survive its mother, if it remain in the womb. On the other side, we ought not to consign her to an inevitable fate, when perhaps she is only dead in appearance.

2098. We cannot too often recal the observation of *M. Rigaudeaux** to the minds of those who may have occasion to perform these sorts of operations: it is inserted in the *Journal des Savans* for the month of January 1749. At the same time that it demonstrates how difficult it is, in some cases, to distinguish a state of *asphyxy* from real death, it teaches us that it is not always necessary to open the body of a woman who appears to have been some time deprived of life, in order to save that of the child. That surgeon not having been able to go to a woman in the country as soon as he was called to deliver her, learned on his arrival, that she had been dead two hours, and that they had not been able to find any person to

* *M. Rigaudeaux*, principal assistant surgeon of the Hospitals at *Douay*, and accoucheur.

perform the Cefarean operation on her. Having wiped off the sweat which covered her, perceiving that she still retained a little warmth and suppleness in the limbs, that the orifice of the *uterus* was much dilated and the waters well gathered, he determined to deliver her by the usual passage, and performed it easily, bringing the child by the feet, after turning it. Though the child appeared dead, he did not fail to pay some attention to it, as soon as he had delivered the mother, and recommended both of them to the women who were present. Their pains which appeared fruitless at first, were not so in the sequel. They revived the child so perfectly, that a few hours afterwards it cried with as much strength as if it had been born in the most natural manner. *M. Rigaudaux* going to see the woman again before he returned home, caused the sheet in which she was wrapped, to be removed, and finding her limbs as supple as at first, though she appeared to have been dead more than seven hours, he tried some methods proper to ascertain whether she were really so, or not, and did not go away till he had made the assistants promise that they would not put her again into her winding sheet till her limbs should be stiff. If he was

agreeably surpris'd when he found the child was restored to life, he was much more so when they came in the evening to inform him that the mother was revived two hours after he had left her. It was on the eighth of September 1745, and both mother and child were still alive in August 1748; but the former had continued deaf, paralytic and almost dumb.

2099. If immediately after the woman's death, we were to find dispositions as favourable to delivery, as those stated in the observation of *M. Rigaudaux*, we ought to prefer the extraction of the child by the usual passage to the Cesarean operation. We ought never to perform the latter but when the parts are not so favourably disposed, and then proceed with as much care as if we expected the greatest success with regard to the mother. A simple incision in the direction of the *linea alba*, and about seven or eight inches long, ought to be substituted for the crucial section which has almost always been made in similar cases*.

2100. Before we subject the living woman to such an operation, it might be useful to

* The senate of Venice has ordered this operation to be performed with the same precautions as if the woman were living, and has forbidden the crucial incision.

prepare her by general remedies, such as bleeding, purging, warm baths, &c. as is done with respect to the other greater operations: these precautions would sometimes perhaps insure success. But unfortunately we cannot always employ them, except bleeding; because we may be called too late, and often even when the parts of the woman have been fatigued, irritated, contused or lacerated by the manœuvres of a bold and ignorant hand.

2101. The Cesarean operation, like many others, has a time of election and one of necessity: the latter always takes place when the waters are evacuated, except circumstances foreign to those which oblige us to operate, present more urgent indications. The instant of the woman's death, no matter at what period of gestation* and that of the child's passing into the cavity of the *abdomen*, from a rupture of the *uterus*, also constitute that time of necessity. As to the time of election, some think we ought not to operate till after the

* We ought never, under any pretext whatever, to dispense with opening the woman's body after her death, in every period of pregnancy, in order to secure the spiritual life of the child, which may survive its mother some time, even in the earlier periods, though it be still very small.

evacuation of the waters, and others that we ought to do it before, and as soon as the labour shall be certainly begun; provided that the neck of the *uterus* be effaced, and the orifice open enough for the discharge of the *lochia*: this time appears to me preferable to the former.

2102. If we should operate at the beginning of labour, and before the waters are evacuated, “we should,” says a modern author, “risk leaving the *uterus* in a state of atony, by disencumbering it too suddenly: which would infallibly cause a flooding, that would carry the woman off.” But the reasons that author gives are not so conclusive, nor so conformable to the present notions of physiology. The motive which determined *M. Levret* to recommend operating before the opening of the membranes is much better founded: by operating before that instant, says he, the extent given to the incisions, as well in the containing parts of the belly as in the body of the *uterus*, would be much smaller after the exit of the child, than if the operation had not been performed till after the discharge of the waters. It is very certain that an incision of six inches affects a smaller number of fibres and vessels, when the *uterus* is still distended by the waters,

waters, than when it is strongly contracted on the child's body, and reduced a fifteenth or a twelfth part in its size. In the latter case, an opening of six inches is much larger relatively to the volume of that *viscus*, than when it is in its greatest degree of dilatation.

2103. It seems to me to be advantageous to have two bistories in order to perform this operation well, viz. one straight and one curved; the latter must cut with its convex edge, and the former must have a very narrow blade and be probe pointed. We ought to have crooked needles and waxed thread to stitch the external wound where it may be thought necessary; fine linen, compresses, a bandage to go round the body, and some spirituous liquors, such as *aqua vulneraria*, brandy, or spirit of wine, which may be lowered according to circumstances with common water.

2104. The woman should be placed on a bed pretty narrow and sufficiently high, that the operator and his assistants may act freely, and with as little incumbrance as possible. It should also be on that on which she is to remain, that we may not be obliged to remove and disturb her immediately after the opera-

tion. It must be covered so that the bed be not wetted with the blood and water, and that when the cloths are withdrawn the woman may be left dry. She ought to be laid on the back, with the legs and thighs extended while the incision is made; and half bent, during the extraction of the child. We may also place a bolster under her loins to support them, and make the belly more protuberant. We ought also, before we operate, to put on her lying-in shift, that is to say, one very short, and open before, as described in par. 1022.

SECTION II.

Of the Part where the external Incision ought to be made.

2105. THERE is scarcely any part of the *abdomen* where the external incision has not been made in the Cesarean operation. Some have made it at the sides; others transversely, either above or below the *umbilicus*; and several

ral in the *linea alba* *. Among the former, some have advised making it obliquely, descending from the extremity of the cartilage of the third false rib towards the *pubes*; others have given it the form of a crescent, and *M. Levret* directed it to be made parallel to the external edge of the *rectus* muscle, but so that it should be equidistant from that muscle, and from another line drawn from the extremity of the third false rib to the superior *spine* of the

* A surgeon of the village of *Attichi*, near *Compiègne*, who had already performed the Cesarean operation successfully, performed it a second time in 1772, and as fortunately for the mother, making the external incision transversely between the *umbilicus* and the under part of the false ribs on the right side. I had an opportunity of being acquainted with that surgeon a few months after the operation; he could not give me any reasons why he performed the operation: the woman has been delivered very naturally since. *M. Tallibon*, a surgeon very well known at *Dourdan*, sent me an account of another Cesarean operation performed in the same manner, about fifteen years before, by one *Sanfon*, on the wife of a farmer of the village of *Roinville-sous-Aunau*, in the diocese of *Chartres*. *M. Tallibon* saw the woman the second day after the operation: it had all the success that could be expected from it. We find another example still more surprising in the *Journal de Médecine* for 1770. The surgeon having made the external incision too high, made another obliquely under it, &c. he afterwards made three stitches in the *uterus*, and the operation had all possible success,

os ilium. They have all recommended making it on the right, or left side, according to the state of the interior *viscera*; in order to avoid, for example, carrying the instrument on a scirrhus tumor, on a hernia, &c. Besides these reasons for a preference, *M. Levret* advised having a regard to the accidental attachment of the *placenta*, in order to determine on which side to operate, and not to open the *uterus* in the part where that body is, as it were, engrafted. I have already demonstrated the uncertainty of the signs by which that celebrated accoucheur affirmed the part where the *placenta* is attached might be known, and consequently the little attention due to the latter precept. If we must operate at the side of the belly, it ought to be on that where the *fundus* of the *uterus* is inclined; in order that that *viscus* may present better to the opening, and that the intestines and *omentum* may not immediately escape through the wound.

2106. The incision seems more fruitful in accidents and more difficult to execute at the side of the belly than in the *linea alba*. There are at the side, as in all other parts, the *teguments* and the cellular membrane, and we meet moreover with three muscular planes whose

fibres intersect each other in such a manner that we cannot avoid cutting the greater part of them across or obliquely: which causes them to retract, and afterwards hinders that co-aptation of the whole thickness of the edges of the wound, necessary for their exact reunion. By making the incision obliquely in this part, we sometimes cut branches of the *epigastric* veins, which run beyond the edge of the *rectus* muscle on which the incision often extends; because it acquires a great breadth in the latter periods of pregnancy: which causes an hæmorrhage sometimes considerable enough to give some alarm, and to oblige us to tie the vessels, or touch their extremities with styptics, as was done by *M. Piesch* *. When we make the incision at the side, the *peritonæum* is scarcely open, before the intestines, confined in the *abdomen*, escape, dilating at the same time, and increase the natural difficulties of the operation. If we are not always secured from this inconvenience by making the incision in the *linea alba*, at least it will happen more

* *M. Piesch* was obliged to apply a styptic to a branch of the epigastric artery which he had cut in the Cesarean operation. See *Journal de Médecine Suppl.* 1770, page 173.

rarely,

rarely, and much fewer intestines will always escape. The longitudinal axis of the *uterus* being never exactly parallel to the oblique incision of the *abdomen*, we cannot open that *viscus* without cutting the greater part of its fibres transversely; which causes them to retract, renders the wound more gaping, afterwards favours the exit of the *lochia* that way, and exposes the woman to other accidents*. When the section is made in the *linea alba*, we only separate, as it were, the longitudinal fibres of the *uterus*; so that the wound contracts much more after the operation. Lastly, in the lateral section of the belly, we cannot open the *uterus* in its middle, but the incision must be made near one of its sides, and therefore runs more risk of affecting the vessels which may be considered as the source of all those that are distributed to that organ, the injury of which is more to be dreaded than that of the *sinuses* or reservoirs that lead to the *placenta*.

2107. *M. Solayres*, in his Lectures on Mid-

* On opening the body of a woman, who a few days before had undergone the Cesarean operation, a portion of intestine was found engaged and strangulated in the opening of the *uterus*.

wifery,

wifery, used to tell us, that the inconveniences attached to the lateral and oblique incision of the *abdomen*, would one day engage practitioners to make it in the *linea alba*. *In the mean time*, added he, *I advise you to perform it in that part, the incision is easier and less painful, because there are fewer parts to cut; the uterus presents itself to the hand, it is divided in its middle part, and in a direction parallel to its principal fibres.* Solayres might have had the credit of first recommending this *new method*, if we found no traces of it in authors before the year 1769; but he indicated the sources from whence he had drawn the idea: it was in the Institutes of Surgery by *Platner*, and the Observations of *Guenin**, a surgeon of *Crépy* in *Valois*. If he did not practise what he taught, it was because he never had occasion to perform the Cesarean operation: one of his pupils, at that very time, performed in the country, but indeed without success, what he would have executed himself. The text of *Platner* and that of *Guenin* have not been explained in the same manner by all accoucheurs. *M. Deleurie* will not allow that

* *Platner* Instit. de Chirurg. § 1440. *Guenin*, Chirurgien de *Crépy*, Observ. sur deux Opérations Césariennes, faites avec Succès.

the first of those authors proposed the section in the *linea alba*, nor that *Guenin* performed it; one speaks of the section of muscles, and the other talks of having cut them: now, says he, as there are no muscles in the *linea alba*, the latter did not cut upon that line, nor the former advise it. Let the reader judge for himself from the notes subjoined*.

2108. If

* *Incidantur juxta lineam albam*, says *Platner*, *plaga majori, quæ ab umbilico ad ossa pubis fere descendit, tum abdominis musculi, tum peritonæum, ubi tamen vitandum ne violetur arteria epigastrica.*

“ I cut the *teguments* about the length of six inches,” says *Guenin*, “ in a straight line, beginning an inch below the “ *umbilicus* and continuing it to within an inch of the *pubes*; “ having afterwards placed the woman flat on her back, in- “ stead of inclined which she was, I continued to cut through “ the cellular membrane, the muscles and *peritonæum*, to dis- “ cover the *uterus*. . . . I made the opening of the *uterus* in “ its body at about an inch and an half from the *fundus*. . . . “ The method which I pursued in my operation differs in “ many points from that recommended by authors. I sup- “ pressed the frightful apparatus of ligatures, &c. I opened “ the *uterus* anteriorly in the body rather than the *fundus*. . . . “ The opening finished at about two inches from its “ neck.” . . .

The certificate given to *M. Guenin* by the surgeons of *Crépy*, furnishes the most complete proof that the incision was in the *linea alba*. “ We found, the sixth day after the opera- “ tion,” say those surgeons, “ a wound in the belly four or “ five

2108. If *M. Deleurie*, by *linea alba*, means only an extended line without breadth, descending from the center of the *umbilicus* to the middle of the *symphysis* of the *pubes*, he is in the right to say *Platner* did not expressly advise cutting upon it, and that the surgeon of *Crépy* did not do it; since one says near, and the other made his incision at the distance of two lines from it. But anatomists, under the name of *linea alba*, comprehend that *aponeurotic* space which separates the *recti* muscles below the *umbilicus*. It always has more or less breadth, which augments also, and sometimes very much, in the latter periods of pregnancy; because the *recti* muscles then recede from each other. It was on that *aponeurotic* space that *Guenin* made his incision, it is there that I advise it to be made, and not precisely in the middle or on that geometrical line, which *M. Deleurie* seems to call the *linea alba*; because the intersection of the *aponeurotic* fibres would

“ five inches long, the lower part of which was about an inch
 “ from the groin, rising in a straight line, nearly in the mid-
 “ dle, to the navel, two or three lines distant from the *linea*
 “ *alba*.” They add that they found the incision even turning
 a little round the *umbilicus*.

render

render the execution a little more difficult in that part.

2109. Even if *Platner* and *Guenin* had not the idea of the section in the *linea alba*, *M. Deleurie* could not then arrogate to himself the honour of it, nor attribute it to *M. Waroquier*, a surgeon at *Lisle* in *Flanders*, whom he quotes in his dissertation *; since it had been practised before the year 1772, though without success, by the celebrated *Henckel*, professor of surgery at Berlin †; and mention is also made of it in a Latin dissertation printed at Vienna in 1776 ‡.

2110. In whatever part we may open the *abdomen*, and in whatever method we may per-

* *M. Deleurie* had no idea of this operation in 1770, when he published the first edition of his work, nor even in 1772; since he then made the incision at the side of the belly. *M. Lauverjat* preferred it, in July 1777 or 1778, when he performed the Cesarean operation in presence of Messrs. *Dubertand* father and son, *Coutouly* and *Ferrand*.

† See *Les Nouvelles Observations & Remarques de Médecine & de Chirurgie*, by *Henckel*, published in German in 1772.

‡ *Caroli Franc. Hopfenstock, Bohemo-pragensis Dissertatio Inauguralis Medico-chirurgico-Obstetricia, de Hysterotomia.*

form it, we shall never much diminish the danger of the Cesarean operation; because we cannot remove every thing which may oppose its success, nor procure every thing which might ensure it. It ought to be performed methodically, that is an incontestable truth, and the method which would be quickest, easiest, and least painful to the woman, would be preferable to any other, provided the consequences of it were not more disagreeable. In performing the section in the *linea alba*, surgery has made one step towards improvement, but not the most difficult one. It is necessary to guard against the purulent and milky discharges which are made into the *abdomen*; to defend the *viscera* from the contact of those humours, and preserve them from the dangerous effects of them: the section in the *linea alba* has not those advantages. It had succeeded twice * at the time I published the first edition of this work, but four women afterwards died in consequence of it, and extrava-

* Messrs. *Deleurye* and *Waroquier* seem to be the only surgeons who have performed the Cesarean operation in the *linea alba* with success.

fations of putrid matter were found in them *. If it has had other successes since, it has also had other victims. I have performed it twice; but though I saved the children, one of the women died on the fourth day, and the other on the fifth: the latter was of a very bad constitution, and so scorbutic as to leave no hope of rescuing her from death; but the former was robust, and in a proper state to bear the operation. I was obliged to proceed to it without delay; she having been in strong labour twenty-four hours, and the waters discharged twenty-one or thereabouts. It was *M. Sigault* who sent for me to this woman; the case not seeming to him favourable for the section of the *pubes* †.

2111. *It*

* The woman on whom it was performed by *Henckel*, another in the country by one of the pupils of *Solayres*, one by *M. Deleurie*, and the fourth by *M. Moreau*, at the Hotel-Dieu of Paris.

† I cannot tell what could induce *M. Lauverjat* to mention this case in the work he has just published; and to say that he had been nursed up with the hopes of performing the operation on this woman, till the moment he was informed I had done it. I never saw her till that very instant; he had promised her his assistance for several months, some pupils
had

2111. *It is easy to perceive*, says M. Deleurie, *all the advantages of having the wound in the uterus as I may say before the eyes, during the progress of the cure, and having it answer directly to the external incision; by that means the humours discharged from the uterus have a free exit.* These advantages would doubtless be very valuable, and would often ensure the success of the Cesarean operation: but hitherto they have been rarely obtained, and then merely by chance. To ensure them a little farther, the *uterus* should be opened at the top of its anterior part, almost to the center of its *fundus*, and not at its inferior part, as has been most fre-

had deposited money in his hands to supply the wants of this woman; for twenty-four hours she had been calling for him in vain, I sent for him myself, and it was not till another surgeon had refused it, that I performed the operation. I yielded to necessity, and twenty persons can attest it. If I was not over scrupulous, to use the expression of *M. Lauverjat*, in performing the operation on this unfortunate woman at her own house, I shall not, I believe, be reproached with having neglected what humanity and charity required of me. This is not the only point of *M. Lauverjat's* statement which I might controvert; but what end would it answer, except to shew that he has been ill informed of the circumstances of the operation and of its consequences? It had no success, nor would any other method have procured it more.

quently done : for that is the region which has been always found opposite the external wound, on examining the bodies of those women who have died in consequence of the Cesarean operation ; while the wound in the *uterus* was concealed behind the *teguments* that had been preserved above the *pubes*, and which it is almost impossible not to preserve, on account of the bladder ; which would equally favour the extravasation of the *lochia* into the abdominal cavity, by masking a part of the wound in the *uterus*, even if that of the *teguments* could be extended to the *pubes*.

2112. If the wound in the *uterus* corresponds with that in the *abdomen*, at the time of the operation, it will not be found opposite to it an instant after, and still less during the cure ; unless the edges of the one contract adhesions with those of the other : which has sometimes happened. To procure this desirable relation, we ought to prolong the external incision to the height of the *umbilicus* ; begin that of the *uterus* about the middle of that incision, and extend it above the superior angle, cutting under the coverings of the *abdomen*, as I did in the two women on whom I performed it : the two wounds would become parallel through their whole

whole length, in proportion as the *uterus* should contract its dimensions after the delivery, and nothing more would be necessary to preserve their parallelism, than to fix that *viscus* by a bandage properly disposed round the belly.

2113. It seems to me to be much more important to prolong the external wound to the *umbilicus*, or even above it according to circumstances, than to carry it downwards to the *pubes*; because by that we discover the body of the *uterus*, which should be opened as high as possible. By prolonging the external incision downward, we only expose the inferior part of that organ, which in the natural state constitutes its neck, and which ought to be preserved in the Cesearean operation *. Besides, an opening made in this part of the *uterus* would al-

* The neck of the *uterus* is not only that little pad called the *ostincæ*, in the natural state, and which projects more or less into the *vagina*; it often forms more than a third of the whole length of the *uterus*. Though it is entirely developed in the two latter months of pregnancy, it recovers its form after delivery, and returns insensibly to its natural state. It is the fibres of all that part which I advise not to be cut in the Cesearean operation; but to guard against that, the incision must be begun at least two inches above the circle which constitutes the edge of the orifice.

ways be out of the surgeon's sight, in the sequel, even if he should divide the coverings of the *abdomen* as far as the *pubes*; since the bladder always covers the major part of it, even when it contains no urine. See the end of par. 2111,

2114. By opening the *uterus* in its inferior part, an easy passage is prepared for the *lochia* into the *abdomen*; because the cavity of the body of that *viscus*, which serves as a reservoir for those fluids, remains almost entire, and is above the incision, which seems to have been made in the most depending part merely to favour their discharge. Besides, the incision preserving after the operation a greater extent than the orifice of the *uterus*, and presenting fewer obstacles to the passage of the *lochia*, also favours their extravasation. By opening the *uterus* near its *fundus*, the inferior part of its cavity remaining entire, may serve for a first receptacle for those fluids, as they distil from the inferior vessels; so that they may escape more easily by the neck. Moreover, as the opening will in this case be opposite the wound in the external *teguments*, the extravasation will not be so easily made into the cavity of the *abdomen*. If we recollect the fortunate successes which bold but unskilful men have obtained
from

from the Cefarean operation, by opening the belly tranſverſely at the height of the *umbilicus*, and the *uterus* doubtleſs in the *fundus*; and the example of *M. Guenin*, who extended the incifion of that organ to within an inch of that part, we ſhall perceive all the value of this remark; it is that which has engaged *M. Lauverjat* to reduce this procedure to a regular method *. Two or three ſucceſſes not appearing to me ſufficient to entitle it to a pre-eminence over the other methods, I neither adopt nor reject it; becauſe all of them have obtained ſome. In the mean time I ſhall prefer the ſection in the *linea alba*.

S E C T I O N III.

Method of performing the Cefarean Operation.

2115. AFTER having determined the part of the *abdomen* and of the *uterus* proper to be opened in the Cefarean operation, it is neceſſary to indicate the manner of doing it. But before

* See his work entitled, *Nouvelle Méthode de pratiquer l'Opération Céſarienne*, 1788.

all, it seems important to observe that we must begin by emptying the bladder with the *catheter*, especially when the woman has not made water for some time. Notwithstanding this precaution, the bladder still sometimes rises up in such a manner before the *uterus*, that it conceals the major part of it; as I observed after the external incision, in a woman on whom I saw the operation performed. The *fundus* of the bladder, in that case, was almost as high as the *umbilicus*, and the bladder itself, though care had been taken to evacuate the urine from it, presented through the whole extent of the incision in the *teguments* of the *abdomen*.

2116. The woman being placed as directed in par. 2104, we must cut deeply through the *teguments* and fat, if the subject be lusty, till we perceive the *aponeuroses* which form the *linea alba*. That must be cautiously divided to discover the *peritonæum* in which a small opening is to be made; proceeding in that respect nearly as in the operation for a hernia *. We intro-

* The *peritonæum* is twice opened in this operation, once in penetrating into the *abdomen*, and again in cutting the *uterus*. The Cesarean operation cannot be performed without it.

duce the fore-finger of the left hand into the *abdomen*, to lift up the *teguments* a little, and remove the parts which might be hurt, out of the way of the instrument, to which the finger serves as a conductor. We then extend the incision towards the *umbilicus*, or the *pubes*, according as it was begun higher or lower, cutting from within outward. Though the bistory with a convex edge is proper for the first incision, I think the straight bistory with a probe point and narrow blade is preferable for the latter: it renders the grooved director needless, which would be necessary to conduct the common bistory.

2117. This first incision must extend from the *umbilicus* to within an inch and an half at most of the *symphysis* of the *pubes*. It will be a little longer than it is usually made, it is true; but then we discover the upper part of the *uterus* better, and we may open it nearer to the *fundus*. It seems to me better also to open the *peritonæum* from above downwards, than from below upwards; taking care to go along one of the sides of the bladder, when it rises up in the manner mentioned at the latter end of par.

2115.

2118. While we cut the teguments of the
abdomen,

abdomen, an assistant should fix the *uterus* in the middle, by pressing a little with both hands on the sides, and another make a similar pressure above the *umbilicus*, in order to circumscribe in some measure the *uterine* tumor, and hinder the intestines from presenting at the wound.

2119. *M. Levret* recommended making a large transverse fold of the *teguments* in the middle of the part intended to be cut, in order to do it more safely: but independently of the difficulty we should find in many cases, in forming this thick fold, I think it useless. There is also a particular method recommended, to avoid the exit of the intestines, said to be taken from *Levret*; perhaps it has escaped me, but I find it no where in his works. *M. Deleurie*, from whom I am going to repeat it, assures us he has experienced its utility in practice. *M. Levret*, says he, as well as *Heister*, desired that we should at first cut only the skin and fat, that we should penetrate into the cavity of the *abdomen* by the inferior part of the wound, and also begin the incision of the *uterus* below, in order that it might be continued from below upward, and from within outward, concurrently with the muscles, by the help of the finger, introduced into that *viscus*. By this precaution,

precaution, as simple as ingeniously conceived, adds he, the *fundus* of the *uterus* will always be maintained above the superior angle of the division of the containing parts both proper and common, the intestines will not present during the operation, &c *. This advice, far from appearing to me so useful as stated, might produce inconveniences which we should always avoid by denuding the *uterus* as far as it is to be opened, before we begin the incision of it.

2120. The *abdomen* being open to a convenient extent, we are to cause a little stronger pressure to be made above the *umbilicus*, to bring the *fundus* of the *uterus* nearer to the level of the superior angle of the wound, and then open it in the middle of its anterior part, with a convex bistory, till we perceive the membranes. We then make a small opening in them just large enough to receive the finger, taking care not to wound the child; and pass the fore-finger of the left hand into their cavity, to serve as a conductor for the straight bistory, with which we continue to open the *uterus* cutting from within outwards, in the

* Observ. sur l'Opération Césarienne pratiquée à la Ligne Blanche, &c.

same manner as we did in dividing the external parts; extending the incision at least to the height of the superior angle of the wound in the *teguments*, and terminating it at an inch and an half or thereabouts above the inferior angle; because by continuing it farther towards the *pubes*, the lower part of it would be concealed behind the bladder, in a few hours after the operation. The extent of this incision must be determined by the volume of the child, which we suppose to be such that its head is generally ten inches or ten and an half in the small circumference. An opening of five or six inches is commonly sufficient; but in general it is better to make it a little larger than smaller, to avoid tearing its angles when the child passes it. That augmentation, says *M. Levret*, is of little consequence, on account of the diminution the wound undergoes after deliverance, especially if it be made before the bursting of the membranes, as I recommend.

2121. The same author advises also to make the incision a little more extensive, when the waters have been long drained off; which is but too common when we are obliged to recur to the Cesarean operation; because too small an opening may endanger the lives of both mother and child,

child, on account of the difficulties it may oppose to the exit of the latter. *M. Solayres* thought, on the contrary, that we ought to give it so much the less extent, as the waters have been evacuated a longer time; because an incision of five inches, said he, then affects more fibres, and yields more than one of six inches, when the *uterus* is in its greatest distention, and still contains the waters. Though this argument seems just enough, I think its author would have been too sparing of the *uterine* fibres, and that *M. Levret* would not have spared them enough, if they had both had occasion to perform the Cesarean operation. We ought, in all cases, to make an opening of about six inches, if the volume of the child require it.

2122. We must cut the *placenta*, if it should present its center under the edge of the bistory; but when we meet with its edge in the neighbourhood of the wound, it is better to detach it in order to open the membranes; as I did in the first of the two operations I have mentioned, and as is done when it is attached to the neck of the *uterus*.

2123. Having

2123. Having opened the *uterus* properly, we insinuate the hand into it to find the child's feet and bring them without; proceeding in that respect, in the same manner as if we wanted to turn the child and extract it the natural way. We disengage the arms in the same manner, when the shoulders are sufficiently advanced, and afterwards introduce a finger into the mouth to bring along the head. We ought not to swerve from this rule, except when the head presents naturally to the wound in the *uterus*; if it be not expelled speedily by the contractile efforts of that *viscus*, we may favour its exit by pressing lightly at the sides of the woman's belly, and at some distance from the incision; or else by insinuating the fore-finger of each hand, under the angles of the lower jaw.

2124. The *uterus* continuing to close after the exit of the child, soon forces the *placenta* towards the wound and expels it; which we may also favour by pulling the umbilical cord, and much more certainly by taking hold of the edge of the *placenta* with the fingers as soon as it presents, in order to disengage it more easily, and make it present a smaller volume
I than

than if we brought it along by continuing to pull the cord. We must also take care to extract any clots which may have formed in the *uterus*, and to pass a finger through the neck of that *viscus*, to force any that may have lodged there into the *vagina*. If the *uterus* remain soft and inactive after the exit of the *placenta*, we must touch it a little externally and stimulate it, to rouse it from that state of languor and oblige it to close itself.

2125. There is little blood discharged from the wound in the *uterus*, when it has been made in the middle of its anterior part; except the *placenta* be attached there, and even then the hæmorrhage does not last long, if the *uterus* contract forcibly. It is not so when the incision has been made elsewhere and towards its sides; when the instrument has divided some of the large arterial and venous branches, the blood may flow more abundantly, because the hæmorrhage lasts a longer time, however strongly the *uterus* may contract. If it should continue so copiously as to occasion any alarm, we ought to touch the lips of the wound with cold water, or even with a little rectified spirit of wine, as some have already recommended *: for want

* See the Institutes of Surgery by *Heister*.

of that, which is not always at hand, we may use vinegar and water.

2126. The hæmorrhage may supervene some hours, and even several days after the operation ; but, *cæteris paribus*, it is then less dangerous than that which proceeds from the division of the large vessels which corresponded with the *placenta*, or of those arterial and venous branches I have just mentioned. It will suffice, in order to stop the flow of blood, to excite the tonic action of the *uterus*, which is always languid in those cases ; either by rousing and stimulating that viscus externally, or by injecting into it, through the wound, cold water, pure, or with a little vinegar, according to the degree of atony ; as is done by the orifice, after a common labour, in flooding cases.

S E C T I O N IV.

Of the proper Treatment after the Cesarean Operation.

2127. IF any blood and water have been extravasated in the cavity of the *abdomen* during the

the operation, we ought to procure its discharge before we dress the wound; either by placing the woman in a convenient position, or only by pressing on the two sides above the hips. Sometimes injections of warm water have been employed, to wash the surface of the *viscera* which had been bathed with those fluids. Such extravasations will seldom happen at the time of the operation, when it is performed in the *linea alba*.

2128. The wound in the *uterus* requires little attention: it contracts and diminishes more than half in a very few minutes, except when that *viscus* remains in a state of atony, and cannot close itself. This wound would easily heal, if it did not generally serve for an outlet to those abundant fluids which the *uterus* discharges in the first days of lying-in. *Roussel* and *Rouleau* advised washing it with an infusion of vulnerary plants, and the latter applied afterwards a mixture of *bals. arcei* & *ol. hyperic.* to it: but the inutility of all these things may be easily perceived. The reunion is the work of Nature, and the hæmorrhage alone requires a particular attention.

2129. In all ages, the *suture* has been used to procure the reunion of the external parts,

and it has been performed in all possible ways. It is, without dispute, the most certain method of obtaining a firm and solid cicatrix: the necessity of keeping a passage open for the discharge of the fluids which escape through the wound in the *uterus*, is the only thing which can counterbalance its utility, and it is with that view that those who have employed it have preserved a kind of opening at the bottom of the wound, by passing a little unravelled bandage round it*.

2130. The *suture* is not however indispensably necessary after the Cesarean operation, that is a fact which experience has already several times proved; because there is no wound whose edges may be more easily brought together; pregnancy having disposed all the surrounding parts favourably for it, and the coverings of the belly being then a third, at least, larger than necessary to embrace the *viscera* closely. But it must be confessed that there is no circumstance in which it is more difficult to keep those edges in perfect contact, on account of their thinness and the little support they have

* A bandage with the cross threads drawn out at the part opposite the wound.

underneath,

underneath, especially when the incision has been made in the *linea alba*; the smallest movements of the woman, and the least pressure on the environs, destroying that contact so necessary to a perfect reunion: so that very often, at the time of dressing, a bunch of intestines has been found without, quite shrunk up under the bandage. The utility of the *suture* therefore seems to arise here, from the very dispositions which lead us to dispense with it.

2131. The *suture* has inconveniences; every one knows that it has often been found necessary to loosen it, and even cut it; either on account of the tension of the belly, or to give an exit to clots of blood formed in its cavity: but notwithstanding that, I think it ought not to be entirely rejected. The quilled *suture*, which is neither more difficult to make nor more painful to the woman, than the interrupted *suture* which has been substituted for it without any reason, is the most proper for obtaining the agglutination of the whole thickness of the divided parts: otherwise only the *teguments* reunite.

2132. The wound in question is not to be considered as a simple wound, which would only require a reunion; and indeed no one has

considered it as such; for all have reserved a passage in it for the *lochial*, which rarely fail, during the first days, to be discharged that way. But can it be necessary to keep an opening of six or seven inches for the discharge of those fluids, when one much smaller may suffice? The air is inimical to the *viscera* of the *abdomen*, and we cannot preserve them from it too carefully. Besides, the intestines require to be kept soft and light, and it often happens that they are bruised by the bandage, when we endeavour to spare the woman the pain of the *future*.

2133. It would be an abuse to multiply the stitches as some ignorant persons have done; but we ought to make two or three to unite about the superior two thirds of the length of the wound. It is sufficient, to preserve an opening of about two inches at the inferior part of it; the wound in the *uterus* being not much larger the day after the operation when that *viscus* is contracted, as it usually is after delivery. I shall not describe the manner of making this *future*, because all surgical authors have mentioned it: I shall only observe that the knots should be tied with bows, that they may be loosened and tightened occasionally.

2134. We

2134. We place oblong compresses on the sides of the wound, and a square one over it; all moistened with the white of egg beat up with water quickened with a little spirit, such as brandy, spirit of wine, or *arquebusade*. I think we ought to put two little cushions very soft, at the sides, above the hips, to make the bandage steady, and force forward any fluids that may be extravasated in the *abdomen*. The whole to be retained by a folded napkin passed round the body.

2135. This wound requires dressing oftener than any other wound penetrating the *abdomen*, in order to prevent extravasations and the formation of clots of blood which the bandage retains between the lips of the wound in the *uterus* and of the *teguments*: we must then take off the dressings every day, or even several times in the twenty-four hours, if we have occasion to suspect those extravasations, or the protrusion of the intestines or the *omentum*. But we may dress more seldom when the *lochia* have taken their natural course, and when the lower part of the external wound presents no other indication but that of reunion. The dressings ought always to be very simple, and without ointment.

2136. It would sometimes be very useful to inject warm water, or weak barley water, to cleanse the surface of the *viscera* from the *lochia*, in the neighbourhood of the wound. It would not be less advantageous to throw it into the *uterus* itself by the wound, to keep its orifice free, and dispose the *lochia* to pass that way. *Roussel*, *Verduc*, *Ruleau* and others, with the latter view, have recommended the introduction of a *canula* or species of hollow *pessary*, into the neck of the *uterus*; but besides that it would be difficult to keep the instrument there, it could not give a passage to clots, among which some are very large. The conduct of *M. Guenin* appears to me preferable, though it is not conformable to the general opinion. A woman on whom he had performed the operation nine hours before, being in a state of considerable suffocation, suffering frequent faintings, and vomiting almost every minute, he uncovered the wound and loosened the *future*, to extract from the belly and *uterus*, the clots formed in them. He afterwards poured in warm wine, and forced it to pass into the *vagina*, by insinuating his finger through the wound into the neck of the *uterus*, to unstop it: this, says he, restored the course of the
lochia,

ischia, which had been suspended by a clot of blood. I think that sufficient attention is not paid to this article, and that by clearing the neck of the *uterus*, from time to time, the success of the Cesarean operation would be more certain. With that intent, I have used an unravelled bandage. I have been reproached for it in a work very lately published; but it has been condemned in opposition to all reason.

2137. We cannot lay down fixed rules for the rest of the treatment; because it must depend on accessory circumstances. If the woman is strong and robust, she may be bled some hours after the operation, and that evacuation may be repeated according to the nature and violence of the accidents which shall occur. The belly must be kept open, by glysters; and the patient must be kept to a strict diet and anti-phlogistic drinks, such as veal or chicken broth, very weak, sharpened with a little nitre, &c. As we can here only give general rules on the subject, it must be left to the sagacity of the surgeon to prescribe particular ones according to the exigency of the case.

2138. We ought to persuade the woman to suckle her child; unless the first accidents of the operation, or those which have preceded it,

deprive her of the power of doing it. Many practitioners have already given this precept, and have supplied the suction of the child, by glassess, or young puppies. That is the way to attract the milky humour towards the breasts, to withdraw it from the *uterus*, and more speedily dry up the source of the discharges which are made through the wound of that *viscus*.

2139. After the perfect consolidation of the wound, the woman ought never to go without a proper bandage, to prevent a subsequent hernia, which happens to the greater part of those who have undergone the Cesarean operation, and which sometimes becomes of an enormous size.

ARTICLE V.

Of Extra-uterine Pregnancy.

2140. THE *uterus* is not the only place where the child may be formed, receive nourishment and increase its size; for children have

have been found in the *tubes*, in the *ovaria*, and in the abdominal cavity: which constitutes three different species of *extra-uterine* pregnancy, though the symptoms and consequences of them are nearly the same. If the first residence of man, as the learned and illustrious Baron *de Haller*, as well as many others, says, is manifestly in the *ovarium*, if he is conceived there, and if the *tube* is only the canal destined to transmit him to the *uterus*, these sorts of pregnancies ought not to surprise us, and those when the child is developed in the *uterus* itself, are much fitter to excite admiration. What obstacles has it not to encounter before it can get thither, and how easy is it for the *tube*, so narrow next that *viscus*, and so wide towards the belly, to let it descend and fall into that cavity!

2141. Of the three species of *extra-uterine* pregnancy, that in the *tube* seems to be the most common; a great number of authors, as *Douglas*, *Santorini*, *Riolan*, *Duverney*, *Solingen*, &c. relate examples of it; while we scarcely meet with any of a *fœtus* in the *ovaria*. I found there some years ago, an irregular bony mass, with nine strong teeth set in it, and a great deal of hair intermixed with a large quantity
of

of butyraceous matter *. *Dionis* †, *Simon* ‡, *M. Galli* §, &c. furnish cases of pregnancies, in which the *fœtus* was developed in the cavity of the belly, and the *placenta* adhered to the *mesentery*, at the bottom of the lumbar column, to one of the *tubes*, or on the *fundus* of the *uterus*. Though some of the children found in the abdominal cavity, on opening the body of the mother, seem to have been conceived there, as those mentioned in the observations of *Dionis*, *Simon* and *Galli*; others have fallen thither in consequence of a rupture of the *uterus*, or of one of the *tubes*, in which they had been formed and more or less developed.

* See paragraph 1964.

† Differt. sur la Génération.

‡ Recherches sur l'Opération Césarienne. Mem del'Académie de Chirurgie.

§ Mem. de l'Académie des Sciences de Bologne, tome II. part. 3. L'Observation de *M. Galli* est aussi inserée dans le Suppl. de la Chirurgie d'*Heister*, part. II. page 67.

S E C T I O N I.

Of the Signs of the different Species of Extra-uterine Pregnancy.

2142. IT is almost impossible to distinguish these pregnancies before the time when the motions of the child are felt, that is to say, before the fourth or even the fifth month, since, strictly speaking, before that time, we have only uncertain signs of common pregnancy. According to some authors, when the child is formed and developed out of the usual parts, the woman continues to be regular, and does not vomit in the first periods as in other pregnancies; on which account, she does not so soon suspect herself to be with child; the breasts secrete no milk; the belly only swells in the region of the *tube* or the *ovarium* which the child occupies, and its motions are felt in another part; lastly, these pregnancies are complicated with a thousand accidents, as we may say, from the very moment of their commencement: but nothing can be more delusive than all these signs, which have often been contradicted by experience. The woman who is

is the subject of the observation communicated by *Ciprianus*, was not regular during the course of her pregnancy, and that evacuation did not return till after the tenth month, about five or six weeks after the period when she had felt the labour pains. In the case of *extra-uterine* pregnancy, published by *Simon*, from *Sabatier* the father, there were colics and a continual vomiting from the beginning to the end. Besides, are not many women regular during the first three or four months of a common pregnancy? And are there not many who never vomit in the whole course of it, and who have not the smallest appearance of milk in the breasts? As to the tumefaction of the belly, I do not very clearly perceive why it should be different from what is observed in a common pregnancy, when the *fundus* of the *uterus* is inclined towards one of the sides of the belly; especially in the latter period, which is that when the woman requires the assistance of art. It is true, it is not the same in the first months, when the pregnancy is seated in one of the *tubes* or in one of the *ovaria*; the circumscribed tumor which it presents is then confined to one side, and cannot extend to the other.

2143. It is only by touching that we can
discover

discover the seat of a pregnancy which the motions of the child have made evident. It is not even impossible to discover by that means whether the child occupies the *tube* or the abdominal cavity; and even whether the *placenta* be attached on the *fundus* of the *uterus*, or not. The woman being laid on the back, so as to relax the abdominal muscles, we begin by ascertaining the existence of the child, either by its motions, or by touching its limbs. Afterwards, we introduce a finger into the *vagina*, to judge of the state of the neck of the *uterus*, and the bigness of its body. They must both be nearly in the natural state; the *uterus*, at least, must be much smaller than at the same period of common pregnancy; for, admitting that its volume augments in *extra-uterine* pregnancy, as *M. Levret* asserts, on the authority of a single case*, that augmentation could not be very apparent, except when the *placenta* has some relation to that *viscus*. It remains shut to the very end of *extra-uterine* pregnancy, and its neck undergoes no change; except that in some cases, it becomes a little thicker, and, as

* Observations sur les Accouchemens Laborieux, part. ii. pag. 427, edit. 4.

M. Galli says *, opens itself a little, with the fruitless efforts which Nature makes to rid herself of the child at the usual period.

2144. The existence of an *extra-uterine* pregnancy being well ascertained, though it may not be possible to determine the place where the child is, exactly, we may, at least, distinguish whether it be in one of the *tubes*, or in one of the *ovaria*, or in the abdominal cavity. In the first case, its motions are less vague and its limbs more confined, on account of the covering furnished for it by the *tube*; the body of the *uterus*, which may be discovered in the manner indicated from par. 381 to 385 inclusively, adheres to the tumor formed by the *sac* which contains the child, and cannot be separated from it: it is like another tumor added to that. The same thing takes place when the child is formed in the *ovarium*, or when it is in the cavity of the *abdomen*, and the *placenta*, as it were, grafted on the *fundus* of the *uterus*. In this latter case, its motions are more extensive and unconfined; because its limbs are not shut up in so limited a space

* Mémoires de l'Académie des Sciences de *Bologne*, tom. ii. part. 3.

as in a *tubal* pregnancy. We may distinguish the body of the *uterus* more clearly, from the tumor formed by the produce of conception, provided the *placenta* be not attached to it; and we may remove the *uterus* more or less from it, by touching properly.

S E C T I O N II.

Circumstances attending Extra-uterine Pregnancy in general, and the Indications it presents.

2145. It is extremely rare that an *extra-uterine* pregnancy arrives at its full period so happily as a common one; especially that where the child is in the *tube*; because the sides of that canal, being very thin, cannot expand sufficiently to contain it, and besides, does not receive blood enough to furnish what is necessary for the development of the child and of the *placenta*. The greater part of *fœtuses* found in the *tubes* and *ovaria*, have not been larger than those of three or four months usually are, and often still smaller; scarcely any have been met with that appeared to be at

full time. The illustrious Baron *de Haller* mentions but one; and he enters into no detail concerning it, nor does he name its author*. *M. le Roux*, a surgeon of *Dijon*, speaks of another communicated to him by his friend *M. Marchand*; but he does not relate the circumstances of it†. A pupil in the *Hotel-Dieu* of *Paris*, a few years ago, presented another case to the Royal Academy of Surgery‡. Some of the members of that academy were of opinion that the child, which appeared to be at full time, was in the extremity of the *tube*; but the greater number thought it was in the *left ovarium*.

* *Système sur la Génération*, traduit en François.

† See his *Observations on Uterine Hæmorrhages*, or *Flooding*. We also meet with another case of *tubal* pregnancy arrived at full time, in the *Journal de Médecine* for January 1774. But the case is so singular, and the author who communicated it, seems to have so little skill, that we may be allowed to doubt it.

‡ *M. Balthazar*, in the month of June 1783: the woman died at the *Hotel-Dieu* the fourth of the preceding month, and thought herself pregnant from the beginning of August 1782. *M. Allan* had attended her at her own house during five successive months, and had strongly suspected the existence of the species of pregnancy in question; which was troubled with very turbulent symptoms.

2146. It seems, notwithstanding these exceptions, that the *tube* cannot be developed beyond what is necessary to contain a child of three or four months. It is at that epoch that it commonly perishes; after which it withers or putrefies. Sometimes also the *tube* bursts, and lets it fall into the cavity of the *abdomen*, where it soon undergoes the same alterations. The fate of the woman, in all these cases, is different, according to that which affects the child: she may live a long time, even without having her health much injured, when it withers and in some measure petrifies; but she soon feels the effects of its putrefaction when that takes place.

2147. The fate of a child which has grown and increased in the abdominal cavity, is not very different from that of one formed in the *tube*: Though it may there be farther developed, live a longer time, and go on to the usual period of its maturity, not being able to get out by the natural passage, it perishes after the fruitless efforts which Nature makes to get rid of it; and generally produces troublesome and alarming accidents. The woman does not always sink under them; but for one who has the good fortune to escape from so many perils,

ten at least become victims to them. In this case, as in other *extra-uterine* pregnancies, the child and its *involucra* sometimes wither, and Nature, by that means, preserves the woman's life a longer or shorter time; but not always without pains and uneasiness, in the first years. Authors have preserved the history of several women who have carried such children, twenty-two, twenty-five, thirty, and even forty-six years.

2148. The withering of the child is not the only means by which Nature endeavours to preserve the woman in *extra-uterine* pregnancies; sometimes she opens new passages to rid herself of the child and its appurtenances; sometimes inflammations arise in the adjacent parts, and abscesses are formed which burst at the surface of the *abdomen*, or into the intestinal canal, by which the remains of the *fœtus* are at length expelled. But how uncertain and dangerous is that passage, when the child conceived out of the *uterus* has acquired all that magnitude which it usually gains within it! How often would the woman not have sunk under the accidents inseparable from this sort of abscesses, if art had not held out its succouring hand to her, and seconded the efforts
of

of Nature seasonably, by enlarging the entrance of the *sinus* she had made, and freeing her from the foreign body which she presented to it!

2149. *Extra-uterine* pregnancies are not the only ones which may terminate in that manner; the beneficent hand of Nature sometimes shews itself in the same manner in common pregnancy, when her efforts have not been able to deliver her of the child, by the usual passage. Several times it has been expelled or extracted through abscesses which have opened under the *umbilicus*, or in some other part of the abdominal surface. The surgeons of the *Hotel-Dieu* of *Paris* were witnesses, in 1777, of a most interesting case, which supports this truth, and the Academy of Surgery will doubtless publish another which has been communicated to it since by a surgeon of *Montauban*. I have now a woman under my care in the same circumstances, and who is almost perfectly recovered*.

2150. If

* This is the woman on whom *M. Millot* performed the Cæsarean operation in 1774, and whom I have delivered several times since, at the period of seven months. See par. 1990. She was scarcely got to the end of the fourth month of her sixth pregnancy, about the first of January 1789;

2150. If the efforts of Nature alone have sometimes saved the life of the mother, in *extra-uterine* pregnancies, though by exposing her at the same time to a thousand dangers, if at other times she has been entirely indebted, for that advantage, to the assistance of art, how many evils might that assistance, always too late for the child, and often for the mother,

when she fell over a heap of ice, in passing through the streets of *Paris*, and violently bruised her belly. Two months afterwards, the part which had been contused, opened, and discharged a great deal of sanious and purulent matter excessively fetid, which brought along with it the remains of rotten flesh, and some pieces of bone which she took for the bones of a fowl, though she did not remember that she had eat any for a long time. She nevertheless continued to go about and do journey-work at the houses of those who employed her, till towards the end of March, when more violent pains obliged her to take to her bed, and send for me. Several pieces of bone presented then at the entrance of the ulcer, and I extracted at least four and twenty others, as well as the remains of a great deal of flesh. In less than eight days the ulcer of the *uterus* was consolidated, and the coverings of the *abdomen* would also soon have been cicatrised, if they had not been impeded by the passage of the *fæces*; the colon being open at least the breadth of a shilling toward the Roman S which it describes. Notwithstanding this complication, the cure was complete before the end of April: my friend *M. Trainel* contributed to it exceedingly by a most ingenious bandage, which can only be applicable to this circumstance.

have

have prevented, if surgeons had been less timid in proposing it, or if they had met with women sufficiently courageous to submit to it in time ! The opening the *abdomen*, and the *tube*, according to circumstances, at the same time that it would have snatched some of these women from certain death, might have saved the lives of many of the children conceived out of the proper place *. “ What is most uncertain “ in this sort of cases,” says *M. Levret*, “ is “ not the difficulty of performing the operation, because we do not then cut the *uterus*, “ and, on that account, it is much more simple “ than the Cæsarean operation, but we cannot “ say so much of the consequences ; for in my “ opinion, they would be very dangerous, on “ account of the hæmorrhage which would “ necessarily follow the separation of the *placenta* from the part where it may be ingrafted. . . . no part of the *abdomen* having “ the faculty of contracting suddenly in so “ considerable a degree as the *uterus*.”

2151. It is this fear of an hæmorrhage, which has hindered almost all those who have

* See Recherches sur l'Opération Césarienne, par *M. Simon*. Mem. de l'Acad. Royale de Chirurgie.

met with *extra-uterine* pregnancies, from opening the woman at the time when Nature indicated it, by the efforts she made to rid herself of the child. Would this hæmorrhage be more to be dreaded, when the child is in the *tube*, or in the *abdomen*, its *placenta* being attached to the *fundus* of the *uterus*, than after the Cæsarean operation? And what consequences could those fearful men expect from their conduct? It is true, that they spared the woman the pain of the incision, but at the same time exposed her to a crowd of accidents quite as dangerous as the hæmorrhage they feared. By that operation, the child of the woman mentioned by *Cyprianus*, might have been rescued from death; as well as that of another woman whose case is related by *Simon* from *Sabatier* the father; hers who is the subject of *M. Gal- li*'s observation*; and another also, communicated to the Royal Academy of Surgery in 1783, by *M. Balthazar*. See par. 2146. By saving the lives of the children, many of the women might have been preserved who died almost at the same instant as the child.

2152. The fear of an hæmorrhage after the

* Mem. de l'Acad. des Sciences de *Bologne*, tom. ii. part 3.

extraction of the after-birth, or that of tearing the parts to which the *placenta* is attached, by the efforts for separating it, such, for example, as the *omentum*, and the *mesentery*, is not, in my opinion, a sufficient reason for rejecting the operation in question. Were we at first only to extract the child to secure the life of that, the motive is powerful enough to determine us to do it. It has been already proposed to leave the *placenta* till it be detached spontaneously, and present itself at the wound, in which the cord must be retained. What harm could there be in such a proceeding? Would the putrefaction of that spongy mass be more to be dreaded than if the operation had not been performed? Every thing speaks in favour of the operation, notwithstanding the danger which may follow it; because the danger is still more certain, if it be not performed. The accidents excited by the presence of the child are soon combined with those which arise from its putrefaction and dissolution; the corrupted fluids not being able to escape, infect the abdominal *viscera*, and death, in a short time, seizes his victim.

2153. In those cases, where it is thought prudent to leave the *placenta*, whether for fear

of an hæmorrhage, or of tearing the part to which it is attached, if it does not detach itself immediately, its putrefaction will be less dangerous to the woman, than when the operation has been neglected; because the putrid fluids escaping by the wound, remain a shorter time in the abdominal cavity, and because they may be washed out by proper injections.

2154. The preservation of the child is not the only motive which ought to determine us to open the *abdomen* in cases of *extra-uterine* conception; its death ought not always to dispense us from recurring to that operation, which often becomes more pressingly necessary, on account of the accidents caused by the presence of the child.

2155. This operation has a time of election, and one of necessity; Nature indicates the former by the efforts she makes to deliver herself of the child, as at the usual period of a regular pregnancy; the time of necessity is marked by the numerous accidents which the woman suffers, sooner or later, after the child's death. Neither is the part where we ought to operate always the same: we must make the opening on the right side, when the child occupies the right *tube*, and *vice versa*; in
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the middle of the belly, when it is in the abdominal cavity; and lastly, in the part indicated by Nature, either by an *abscess* or a *sinus*, when she has already made some salutary efforts to rid herself of the foreign body. After the operation, we must proceed according to the circumstances that happen. This operation, the necessity of which was long ago perceived, is now supported by the authority of experience: besides the examples of *gastro-tomy* performed with success in cases where Nature had manifested her intention by an *abscess*, or a *sinus* which opened in the external parts, there is one which tends to cause it to be adopted before those disorders happen. The surgeon who sent this case to the Academy, perceiving, when he delivered the woman, that there was a second child, and that it was in the abdominal cavity, divided the coverings of it, to give it a passage, and by that operation, had the satisfaction of preventing a crowd of accidents which might have been fatal to the mother. The Academy of Surgery, always employed in promoting the art, will not fail to publish this case with all its circumstances.

A R T I C L E VI.

Of the Rupture of the Uterus, considered relatively to Delivery.

2156. THE child pressed on all sides by the action of the *uterus*, always passes out of it at the part which is weakest, and which gives it the least resistance. Although it is generally at the orifice, conformably to the intentions of Nature, sometimes also, though very rarely, it opens itself another passage, through the substance of the *uterus*, and passes into the abdominal cavity, from whence it cannot get out, unless art come speedily to its assistance.

 SECTION I.
Of the Causes of the Rupture of the Uterus, and the principal Accidents attending it.

2157. MOST authors, in treating of the rupture of the *uterus*, have attributed it only to
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the extraordinary motions of the child*, without considering that many women had felt none at the time when it took place, and that in others, it had not happened till after the death of the child. Whatever force we may suppose in those motions, they will never be able to effect that rupture, unless other causes act at the same time, or have already disposed the *uterus* to it; but, on the contrary, those causes may produce it without the assistance of the child's motions. The child is almost always passive at the time the *uterus* tears; if it becomes the instrument of the rent, it acts no otherwise than any other solid body of the same volume, inanimate, and of an angular surface would, on which the *uterus* should be strongly contracted. The extraordinary movements which have been regarded as the cause of these accidents, have generally been only the consequence of them. It is not in the *uterus* that the child had moved in that manner, but in the abdominal cavity, whither it

* *De la Motte*, tom. ii. page 1189, edit. de 1775.

Levret, Art des Accouchemens, edit. 3, § 559 and following.

Crantz, Commentarius de Rupto in Partus Doloribus Fœtu Utero 1756, and many other authors.

had been forced by the rupture in question: it was easy to be deceived in it; because the instant of the child's passage into the *abdomen*, and that of the rupture by which it passes, are, as I may say, indivisible, the same effort producing both.

2158. The violent and sometimes convulsive action of the *uterus* on the child's body, is almost always the only cause of its rupture; and it will take place much more certainly, if that action is assisted by that of the muscles which surround the abdominal cavity, which press the *uterus* unequally, as they cannot act in all parts immediately on its surface, and serve for a support to every point of it. Those muscles act nearly as any other power would do which should press the belly strongly, if the back were placed against a wall*. It is always at the height of a pain, or of a contraction of the *uterus*, and at the time when the woman bears down the strongest to second that effort, that

* I have collected several examples of a rupture of the *uterus* from external causes, in a very long dissertation on that species of rupture, which I intend to publish when I have leisure to give it the finishing stroke: it will be found to contain a complete body of doctrine on this accident, the most formidable that can happen in the course of labour.

the rupture takes place. It is not however necessary, in order to effect it, that those united powers should act with all the force of which they are susceptible, since that accident has happened in some cases, at a time when the labour was scarcely begun : it is sufficient that that force be superior to the resistance opposed to it by the part which tears.

2159. A *uterus* perfectly sound may tear, as well as one affected by any disease which has previously weakened its tissue. If every point of its surface is so disposed as to support equally the effort which tends to expel the child, at the beginning of labour, it is not always the same at the latter end of a very long labour, when great obstacles oppose the delivery ; because the substance of the *uterus* necessarily weakens in some part, and especially at those points which answer to the angular parts of the child, or which are pressed by its head against the margin of the *pelvis*, and sooner or later, those parts give way.

2160. The rupture in question cannot happen in any case, unless the *uterus* has been predisposed to it by those means, or by other causes which are all accidental. Sometimes a tumor weakens the substance of the *uterus*, and dis-

poses

poses it to tear; sometimes an ulceration more or less superficial, or the preternatural tenuity of one of its regions; at other times, it may proceed from indurations and callosities of its neck, or of the *vagina*, a deformity of the *pelvis*, and even from the obstacles arising from the external parts, the bad situation of the child, or of the head alone, &c.

2161. External causes may tear the *uterus*, without the assistance of all those I have just mentioned, at whatever period of pregnancy they may act, provided however that it be towards the period of its maturity. We find examples of it from a fall, from a strong pressure on the belly; and much oftener from the unskilful application of the hand, or of instruments destined to perform the delivery.

2162. There is not a single point where the *uterus* may not tear; but we observe, nevertheless, that it is generally towards its sides, the *fundus* or the neck: which is not difficult to account for. The part where the *placenta* is implanted is not more secure than the rest; and the rupture has taken place in some cases at the very part which seemed to be fortified by a scirrhus tumor with a large base. The rupture does not always follow the same direction, nor al-
ways

ways present the same aspect. Sometimes it happens longitudinally, at other times, transversely, obliquely, or in a semi-lunar form. Sometimes the edges are even, and it only presents the appearance of a simple bursting, or of a wound made with a cutting instrument; at other times they are unequal, as it were ragged, and it resembles a contused wound.

2163. We must distinguish these two species of rupture, from ulcerations of the *uterus* which arise from some of the causes already mentioned; as in consequence of a long and severe labour, in which Nature had not been able to deliver herself of the child by the usual passage; whether the obstacle arose from a deformity of the *pelvis*, or from some tumor of the neck of the *uterus* and of the *vagina*; or only depended on the bad situation of the child, which had not been rectified in time; or whether those ulcerations were only the consequence of an external percussion, &c. In the former case, the place which answers to the hardest and most projecting parts of the child, those which have been long bruised by the head pressing against the margin of the *pelvis*, inflame and ulcerate, in the same manner as that which has been struck, and an opening

opening is produced smaller or larger, very different from a simple rupture which takes place suddenly. Most frequently, before these ulcerations are formed, the *uterus* contracts adhesions with the neighbouring parts, which also ulcerate at length, and the event is different, according to the parts where those adhesions take place. When they take place before, the *fœtus* may be discharged whole, or piece-meal through the ulcer, as I have lately seen *: when they are formed elsewhere, the woman's life is in more danger; because we cannot give her the same assistance.

2164. Although the rupture of the superior part of the *vagina*, in the part where it is united with the *os tinæ*, has more relation to the simple rupture of the *uterus*, than to these ulcerations, it must also be distinguished from it, because it is not so dangerous as that, and because it presents different indications, considering them at the time only relatively to delivery. These rents of the *vagina* have been frequently confounded with those which happen in the neck of the *uterus* near its insertion in that canal; because the latter have often,

* See the note on par. 2149.

like them, a semi-lunar form, and because the *os tinæ* is entirely effaced at the time when we discover them, and when we extract the child*.

2165. The danger which threatens the woman whose *uterus* is torn, arises much less from the rupture simply considered, than from the passage of the child and the *placenta* into the abdominal cavity, and the extravasations of blood which are formed there at the same time. It is true that the child does not always go thither, nor does the *placenta* always follow it, when it passes entirely out of the *uterus*; Nature in some cases throwing it off by the usual passage. Sometimes only a single limb of the child escapes from the *uterus* through the rupture; sometimes an arm or a leg; or the two inferior extremities and the half of the *trunk*; at other times, the head alone. Although the rupture be large enough for the exit of those parts, it sometimes happens that no one passes through it; because it answers to a part of the child's surface, which is much larger still; so

* I shall relate several examples of these ruptures of the *vagina*, in a dissertation on the rupture of the *uterus*, mentioned in par. 2158.

that it remains entirely in the *uterus*, if it cannot be expelled the natural way.

2166. The passage of the child into the *abdomen* and the extravasation of blood into that cavity, are not the only complications of the rupture of the *uterus*; the intestines floating above, sometimes insinuate themselves through the opening, into its cavity; even before the child is out of it. If they be not reduced, while the opening preserves nearly its original size, they are strangulated in it, in proportion as the *uterus* closes; because the rupture contracts and diminishes in the same proportions as the volume of that *viscus*, and the woman is destroyed by the accidents of a strangulated *hernia*; as we particularly observe in a case communicated to the Academy by *M. Percy* the son, from his father *.

2167. The fear of being charged with unskilfulness in announcing the rupture of the *uterus*, at the instant it happened, has hindered

* This *hernia* was not discovered till the opening of the body; the wound in which it was strangulated was scarcely sensible, though it had been prodigiously large, says *M. Percy* the father, who was a witness of the fact, before the contraction of the *uterus*,

accoucheurs who have been witnesses of it, from employing the only possible means of preserving the mother and child, much more than the opinion they held that it was essentially mortal. . *M. Levret*, who, as well as many others, thought that *gastrotomy* was the only resource in such cases, seemed to doubt whether it would ever be put in practice. The mother and child are inevitably lost, says he, when the *uterus* tears before delivery; there is no means of saving them but the section of the *abdomen* performed instantly: but, continues he, what accoucheur would be bold enough to perform it in time, and what parents would have courage enough to permit it to be executed without delay? A great number of cases attest the truth of *M. Levret's* prognostic, and there are some which no less demonstrate the necessity of recurring to the operation which he dared not recommend openly; and shew that there have been surgeons so regardless of their own interest as to propose performing it instantly, and that there have been women courageous enough to submit to it.

S E C T I O N II.

Signs of a Rupture of the Uterus.

2168. THE greater part of the predisposing causes of the rupture of the *uterus* being most frequently unknown to us during the course of labour, and that rupture not always taking place in cases where the most apparent of those causes render delivery impossible, it seems difficult to indicate the signs which shew that accident is likely to happen, and consequently to lay down the *prophylactic* treatment.

2169. When the woman is threatened with a rupture of the *uterus* in a laborious labour, according to Doctor *Crantz* *, the belly is very prominent and tight, the *vagina* lengthened, and the orifice of the *uterus* very high; the pains are strong, leave little interval, and do not advance the delivery. *M. Levret* adds, that the pain the woman suffers, is always seated towards the middle of the epigastric re-

* *M. Crantz*, Dissert. sur la Rupture de la Matrice, trad. Franç.

gion; that a last effort or violent leap succeeds to the repeated strugglings of the child, which announces its death and the rupture of the *uterus*. But these symptoms are too uncertain for us to take them for a rule. The rupture of the *uterus* has often taken place without being preceded by any of them, and has not happened in other cases where their union seemed to declare it inevitable. If we were to take them for our guide, we should sometimes trench upon the rights of Nature, by performing a delivery which she would have been able to terminate without inconvenience; we ought not to flatter ourselves, in any case, that we have prevented a rupture of the *uterus*.

2170. What those authors advance concerning the symptoms which succeed the rupture of the *uterus* and which denote it, are much more conformable to experience. At the time when it happens, say they, the woman feels an acute pain in the part itself, and shrieks suddenly; her face grows pale; she has frequent *syncopes*, and her pulse becomes small; the form of the belly changes more or less according to the part of the child which has escaped from the *uterus*; cold sweats succeed, with convulsions, vomiting, and other accidents, according

as the child acts on this or that *viscus* of the *abdomen*; and death soon closes the scene, if we abandon the woman to her melancholy fate.

2171. But those symptoms do not characterize the rupture of the *uterus* so clearly, that we may not be deceived by them in some cases; touching demonstrates it in a much more certain manner *. When that accident precedes the opening of the membranes, the *pouch* shrinks immediately, and becomes very flaccid, though no fluid is discharged without, because it is discharged into the belly; the orifice of the *uterus* contracts, at least, unless a part of the child be engaged in it before the rupture; if the child passes entirely into the *abdomen*, the *uterus* closes and reduces itself to the size which we commonly observe after a natural labour; the motions of the child, if it be still living, are felt in a different part from that they were felt in before; lastly, we may easily distinguish its limbs by laying the hand on the woman's belly, if we search for them immediately; but the swelling and painful tension of the parts prevent it afterwards.

* See the dissertation already quoted, and the works of *M. Leuret*,

2172. The labour pains properly so called cease as soon as the child is entirely in the abdominal cavity, and especially if it is followed by the after-birth; but the woman feels pains of another kind, which were unknown to her before. When the effort which has torn the *uterus* has not been able to expel the child from it, the pains continue, because the *uterus*, notwithstanding its rupture, continues to contract and endeavour to get rid of it: sometimes it expels the child the natural way, and sometimes forces it into the cavity of the belly, according as it finds one to be easier than the other. In the former case, the part which it presented advances more and more, and in the other it recedes insensibly and disappears. Sometimes also it remains in the *uterus* whose strength is exhausted, and the labour ceases. In other cases where the head was descended into the *pelvis*, or strongly engaged in the *strait*, it keeps its position there, while the rest of the body, especially the extremities, and the inferior part of the *trunk*, penetrate into the *abdomen*. The same thing has been observed after the rupture of the *vagina*.

S E C T I O N III.

Of the Indications presented by a Rupture of the Uterus.

2173. IT would incontestably be more advantageous to prevent a rupture of the *uterus* by performing the delivery, than to wait till it happen, to terminate it afterwards; but on what grounds shall we decide to pursue a method which may also be attended with accidents, either with respect to the mother or the child, since, strictly speaking, no certain sign can indicate that the rupture in question is inevitable? The means of preventing it would consist in extracting the child by the usual passage, or by the Cæsarean operation, and the latter is recommended by Doctor *Crantz* in a number of cases: he observes however that it would be entirely out of season, if the child's head were locked in the *pelvis*. I will venture to add that it would then be contrary to every principle of humanity; as well as in those circumstances where the *pelvis* of the woman is well enough formed to give the child a passage; since

since the art presents more gentle and certain resources for the mother. The Cefarean operation is not exclusively indicated but when the *pelvis* is absolutely too narrow; and then it is much less the fear of a rupture of the *uterus* which leads us to perform it, than the impossibility of terminating the delivery any other way.

2174. Bleeding, warm baths, fomentations, mucilaginous injections into the *vagina*, the incision of the neck of the *uterus* when it is hard and callous, the section of bridles in the *vagina*, &c. the application of the forceps, the extraction of the child by the feet, and by means of crotchets; and lastly, the Cefarean operation, are so many *prophylactic* methods which must be employed according to the exigency of the case.

2175. The curative method in the rupture of the *uterus* considered relatively to delivery, must not be less varied than the *prophylactic*. Though the section of the coverings of the *abdomen* is often the only resource in surgery to save the mother and child, or to rescue the former from terrible accidents, by extracting the latter, and its after-birth, as well as the blood which is extravasated; sometimes also
that

that operation would not be less contrary to the principles of the art, than if we were to perform it on account of most of the predisposing causes of that rupture: for notwithstanding that accident, it is not always impossible to extract the child by the usual passage. *De la Motte* and others furnish examples of it, which however I do not quote to serve for models. The former turned a child searching for the feet through the rent in the *uterus*, as far as the middle of the belly whither they had penetrated; and others assure us they had brought back a child that way, which had escaped completely out of the *uterus*: which will not appear probable to those who know how much the *uterus* closes from the moment it is emptied, and how much the rupture then loses of its extent.

2176. When the head presents after the rupture of the *uterus*, even if it should not be engaged in the *pelvis*, provided the deformity of the latter does not offer any great obstacles to it, we ought to terminate the delivery with the forceps; whatever part may have penetrated into the *abdomen**. It may easily be
conceived

* The forceps might have been usefully employed in a
number

conceived to what danger we should expose the woman by attempting to turn a child the major part of whose *trunk* should be in the abdominal cavity, and the rest in the ruptured *uterus*. If we cannot extract it by means of the forceps, or with the crotchet when dead, *gastrotoomy*, that is to say, the incision of the coverings of the belly, is as manifestly indicated as when it has been entirely forced into that cavity.

2177. This operation is preferable to the conduct of some practitioners who have passed the hand through the rent in the *uterus* to search for the child's feet, far into the *abdomen*, whither they had penetrated with a part of the body; and even the whole of it, if we credit

number of cases where the child has been turned, or in which nothing has been done which could rescue the woman from her fatal destiny: as in the case related by *M. Thibaut* of the Academy of *Rouen*; in another communicated to the Academy of Surgery by *M. Chevreul*; in that of the two hundred and fifty-first observation of *Mauriceau*; of the sixty-sixth of *Destalpart-Van-Derwiël*, *centurie premiere*; of the three hundred and ninety-ninth of *de la Motte*; in the case of *M. Buzan*, related by *Levret*, &c.: although the child's head was not equally advanced in all these cases; and though in some of them it only presented over the entrance of the *pelvis*.

their

their accounts *. We ought not to extract the child by the feet but when they are found in the neighbourhood of the orifice of the *uterus*; or when the child is still entirely in that *viscus*. Though this method is not exempt from inconveniences in some cases, those inconveniences are less severe than what may result from *gastrotony*.

2178. The section of the coverings of the *abdomen* will not appear so indispensable after a rupture of the *vagina* as after that of the *uterus*, to extract a child which has passed entirely into the abdominal cavity †, if we attend to the difference of these two cases, with respect to the rupture itself. After the exit of the child, the rent of the *uterus* contracts in proportion to the reduction in the volume of that *viscus*, to that degree that the finger has hardly been able to penetrate it two days after it has happened, though large enough at first, to let half of the child into the *abdomen*, and the hand of the operator also: but that of the supe-

* *Peu*, Pratique des Accouchemens, Livre I. page 79.

† *Saviard*, Observ. *M. Thibaut*, Journal de Médecine, tome I. 1754; *M. Chevreul* and *M. Chauffier*, Observ. communiquées à l'Acad. de Chirurgie.

rior part of the *vagina* does not diminish in the same manner, whatever may be the contraction of the *uterus*. Those who have sought for the child when it was entirely in the *abdomen*, and have extracted it by the natural passage some hours after the rupture had taken place, have doubtless taken the rupture of the *vagina* for that of the neck of the *uterus*: for it is not practicable except in the latter case. The operation which I recommend, not only for extracting the child and its after-birth from the cavity of the belly, but also to give an exit to the blood and waters which may have been extravasated there, and which cannot be discharged otherwise, is more easy to execute than the Cæsarean operation properly speaking, and does not seem to be more dangerous; for on one side, we have not the *uterus* to open, and on the other, the rupture of that *viscus* is not essentially mortal. It has been done several times with success to the woman, and probably it would have had as much with respect to the child, if it had been performed immediately after the rupture of the *uterus* instead of deferring it several hours, as has been done in all those cases. *M. Thibaut des Bois*, a surgeon of the town of *Mans*, published the first example

ple of it in 1768 *, and the Academy of Surgery has since received two others much more interesting.

2179. In *M. Thibaut's* case, every thing was exceedingly well disposed, and seemed to announce a speedy deliverance, when the woman felt a sharp and very short pain towards the superior and left lateral part of the *uterus*, after which, the head which had presented favourably, disappeared. Not finding then either the child or the *placenta* in that *viscus*, *M. Thibaut* was not afraid to propose *gastrotony*, and to demonstrate the danger of deferring it. He performed it, but not till after some hours; which rendered it useless to the child. The woman suffered, in a manner, nothing but the usual consequences of a common labour.

2180. *Gastrotony*, performed twice on the same woman, by *M. Lambron*, a surgeon of *Orleans* †, was not more salutary to the child; the first time because it was not performed till eighteen hours after the rupture of the *uterus*. But the woman at the end of three weeks

* See the *Journal de Médecine* for May 1768.

† The 9th August 1775, on the wife of *Charles Dumont*, gardener at *St. Jean de la Ruelle* near *Orleans*.

seemed

seemed to be nearly recovered, when a tumor of the size of a fist appeared in the hypogastric region, and seemed disposed to open, as in fact it did, four days afterwards. Notwithstanding this gangrenous abscess, out of which came eighteen worms from four to six inches long, and of the same species as were discharged at the same time, from the *anus* and *vagina*, the woman resumed her labours in the fields in six weeks from the time of the operation. Being again pregnant the following year, she suffered the same accident, the child again passed entirely into the abdomen, and *M. Lambron*, who was present, again performed the operation of *gastrotomy*; without any farther delay than what the woman demanded to receive the sacraments. The child gave signs of life during half an hour after the operation, and the subsequent symptoms were very mild. This woman became pregnant again, and was delivered naturally of a healthy child.

2181. The operation in question is not the only possible resource for a woman whose *uterus* is torn by the efforts of labour; Nature, always attentive to our preservation, sometimes saves her life, after having led her from one danger to another, and by no other means than

those I have stated concerning *extra-uterine* pregnancy. But the successes which I have just quoted, no less on that account, demonstrate the pre-eminence of the operation over those singularly rare efforts, and which would have been still most commonly fruitless, if surgery had not aided them seasonably ; either by opening the abscesses which formed, or by dilating the entrance of the *sinuses* containing the child or its remains, or by extracting them.

2182. The rupture of the *uterus* does not always present one and the same indication ; because the danger attending it does not always arise from one and the same cause. After having extracted the child, its after-birth, the blood and waters if any have been extravasated into the *abdomen*, it seems to require no other treatment than the wound made methodically in the Cæsarean operation ; because it contracts like that, and consolidates in the same manner *. If a loop of intestine gets into it,

* *M. Crantz*, author of a dissertation which I have already quoted, is not of my opinion on this point ; because this sort of wounds, says he, is always accompanied with contusions, *echimosis*, and sometimes gangrene : but his doctrine has been unanimously rejected by all authors.

it must be disengaged from it ; if it is so strangulated that we cannot withdraw it, the wound must be dilated, in the same manner as the inguinal ring in a common hernia. This complication becomes much more troublesome when the child has been extracted the natural way. Though we may then push back the intestine into the *abdomen* immediately after delivering the woman, as several authors have done, and particularly *Rungius* *, how can that reduction be obtained when the accident has been mistaken at first, and when the intestine is strictly confined in the wound of the *uterus*, as we remark in the case quoted in par. 2166, from *M. Percy* ? The woman must quickly sink if we do not effect the reduction ; whatever difficulties it may present, they are not above the resources of the art. I would not recommend carrying the hand armed with a bistory into the *uterus*, to enlarge the ring formed by the contracted wound, as a surgeon asserts he did with success the third day after delivery, to reduce a loop of intestine which had fallen into that *viscus* some hours before, having reduced a still larger portion at the

* Quoted by *Heister*, Instit. de Chir. tome ii. page 137.

time of delivery*; but might it not be allowed in such a desperate case to open the *abdomen* to withdraw the intestine, as was proposed by *Pigrai* for a strangulated inguinal hernia, and as has been practised by some surgeons to remove interior strangulations?

* A case communicated to the Academy of Surgery in 1775, by a country surgeon, and which would be extremely interesting if its circumstances were well described.

C H A P. VII.

*Of compound Pregnancy, false Conception, and
Abortion.*

2183. **H**AVING already treated very copiously of common pregnancy, and the mechanism of the different species of labour, as well natural, as preternatural and laborious, I shall close this work with what relates to compound pregnancy, to false conception and abortion or premature delivery, commonly called miscarriage.

A R T I C L E I.

Of compound Pregnancy, its Signs, and the Indications it presents relative to Delivery.

2184. **COMPOUND** pregnancy is that which consists of several children, and the name of

twins is usually given to them, without any regard to their number; though that name, strictly speaking, signifies only two; the others being *triplets*, *quadri-gemini*, &c. A pregnancy of two children is rather rare; one of three is still more so, and we hardly ever meet with *quadri-gemini*.

2185. These children are not always enveloped in the same membranes, nor situated in the same manner, either with respect to each other, or to the orifice of the *uterus*; which often presents particular indications relatively to delivery. Though they are sometimes contained in the same membranes, at other times only one is common to both of them, that is the *chorion*, and each twin has its separate *amnion*: lastly, there are some who have both membranes very distinct and perfectly separate; so that each of them has its own *chorion*, its own *amnion*, *placenta* and waters.

2186. In the former case, the *chorion* and *amnion* form but one bag, in which the twins float in the same waters, and there is but one *placenta*, or else the two masses appear to form but one. This mode of being is not the most usual with twins, and we may add that it is not the most advantageous. When they are
thus

thus disposed, their cords may be entangled, and form knots upon each other during pregnancy; both children may present some of their parts together at the orifice of the *uterus* in labour, and advance at the same time, or reciprocally oppose each other's exit: which happens much seldomer than in the other cases, &c.

2187. In the second case, each twin is contained in a particular bag, formed by the *amnion* only; and those bags are covered by a common membrane. They often have but one *placenta*; and when each has its own, those masses are as it were grafted on the same base, so that we cannot extract one without the other. The twins are not bathed in the same waters; their cords cannot be entangled as in the preceding case; one of them may die, and putrefy without injuring the health of the other, as I have several times observed; they seldom present any of their parts together uncovered at the orifice of the *uterus* in labour, &c.

2188. In the third case, each twin being contained in a particular bag, formed by the *chorion* and *amnion*, they have their *placenta* distinct; so that we might extract one of the children, and its afterbirth immediately after-

wards, without much inconvenience. It is in such circumstances, that accoucheurs, not suspecting the existence of a second child, have involuntarily abandoned it to the care of Nature, which has often not expelled it till the next day or several days afterwards. As no sign can demonstrate before deliverance, whether the children have their *involucra* common or particular, we ought never to attempt the extraction of the afterbirth till after the exit of the last child.

2189. Besides the membranous *involucra*, twins may have other parts common, which I have already mentioned in treating of monstrous births. See par. 1940 and following.

2190. The situation of twins, with respect to each other, or to the orifice of the *uterus*, is exceedingly various. Sometimes they are placed parallel to each other, and sometimes they cross forming angles more or less acute; one of them presenting the head, the feet, the knees, or the breech at the orifice of the *uterus*, and the other a different part; as we shall see hereafter.

2191. Naturalists, desirous of knowing the most abstruse operations of Nature, have often endeavoured to investigate the primary cause of twins;

twins; but they have formed very different ideas of it. Some have thought that the children were conceived in the same instant; others at periods more or less distant, and have regarded the latter as the effect of an additional conception, which they have called *super-fætation*. Though this latter be admitted in those animals who have the *uterus* divided into two horns, we cannot admit it so generally in the human species; and I think, with many others, that it cannot take place but in those women who have the *uterus* double: which is much more rarely met with than the pregnancy of several children.

2192. Nothing could be more favourable to the partisans of *super-fætation* in the human species, than the birth of one child black, and the other white, of a woman in *Guadaloupe*, who declared that she had been forced to yield to the threats of her slave immediately after she had quitted the arms of her husband; but how rare such examples are, and how many reflections might be made on this! The birth of children of different length and thickness, and so different in that, that they seemed to have been conceived at times very distant, has furnished another argument in favour of *super-fæ-*

tation. The following examples may cause those persons who rest their opinion on the testimony of others, to suspend their judgment.

2193. A woman having had a pretty severe fall towards the fourth month and an half of pregnancy*, immediately felt a pain in the back, accompanied with a troublesome heaviness at the bottom of the belly, and a very trifling shew of blood which lasted several days. Two little bleedings at the arm, a strict repose, and a diluting drink having dissipated these accidents, she went the usual time. She had two children, one of whom was at full time and healthy; the other dead, scarcely corrupted, and so small, that it hardly equalled the weakest *fætuses* of five months: there was but one *placenta* and one *chorion*, but two *amnions*. The parents looked upon the latter of these children as a proof of *super-fætation*: I thought, on the contrary, that it had been conceived at the same time with the former, and that its death had been caused by the fall the mother had at the time stated. Another case, entirely of the same species†, and many more which have the greatest affinity with it, have confirmed me in that opinion; which will doubtless be that of

* In 1772.

† In July 1788.

all sensible persons who will be at the pains of examining these facts in all their circumstances, and without prejudice.

2194. Though we cannot positively assert that twins whose *involucra* have nothing common between them are the produce of the same conception, at least, it seems to me out of doubt with respect to those which are contained in the same membranes, and which have but one *placenta* and one *chorion*: except it be pretended that *super-fœtation* takes place within a few hours, in the same day, &c.

S E C T I O N I.

Of the Signs of a Pregnancy composed of several Children.

2195. THE extraordinary size of the belly at any given period of pregnancy, its division into two tumors more or less apparent in the latter months, an *œdema* of the inferior extremities from the third or fourth month, and the
motions

motions the woman may feel in several parts at the same time, are exceedingly uncertain signs of the presence of several children. There is not one of them which we have not observed in women who were big of only one, while we have often remarked nothing of the kind in those who were really so of two. I do not however deny that the union of all these signs sometimes gives strong presumptions of the existence of twins; but touching alone can dissipate our doubts, and that only in the last months of pregnancy.

2196. When the belly is so large as to give a suspicion of two children, if there is but one, it is always very moveable; because it is then in a large quantity of water: we easily move it by means of the finger introduced into the *vagina*, and its rolling is never more manifest than when we do that. When there are two, that movement is scarcely sensible; we easily distinguish that the child we endeavour to move by touching, is surrounded by only a little fluid, and that it is encumbered by another solid body; if we apply a hand on the woman's belly in one of those moments when the *parietes* of the *uterus* are supple, and as it were slackened, we may discover those children as clearly as in
other

other cases we distinguish the feet, the knees, or the arm of that which is single.

2197. The certainty of the signs of the existence of several children seems to augment in proportion to the time in which the knowledge of it becomes more important. If those signs are uncertain in the first months, it is then of no consequence to know whether the woman is pregnant of several children, or only one; but it is not entirely the same at the time of labour, for sometimes the safety of both mother and children depend on that knowledge. If we may be allowed to doubt of the existence of two children before the time of labour, we cannot mistake that of the second after the exit of the first. The belly then remains very large, the *uterus* appears scarcely diminished, the woman still feels motions, and is soon tormented with new pains if we leave her in that state. Though some of them have expelled the latter child in a few hours after the birth of the first, others have not done it till the next day, the day after, and even later; or have not been delivered of it till those periods, either because they wanted strength to expel it, or because the child presented badly. Far from lavishing praises on those accoucheurs who had
assisted

assisted some of these women in the first labour, and admiring their prudence, as ignorant people often have done who thought that delay necessary for the perfection of the second child, I think they could not give a stronger proof of ignorance or inattention, and that the success which has attended their conduct cannot excuse them for it in the eyes of the skilful.

SECTION II.

Of the Indications presented by Twins relative to Delivery.

2198. THOUGH the pregnancy consist of several children, delivery may take place as naturally as if there existed but one; provided that they present successively and in a proper situation at the orifice of the *uterus*. We observe only that the expulsion of the first is generally performed with a little more difficulty than in a common labour: which doubtless is because the *uterus* does not embrace it equally in all parts, and cannot act immediately on it except
on

on one side : for each twin is in general smaller than the child which constitutes a common pregnancy *.

2199. When the first child presents well, if the head advances in the usual direction according to the position it is in, we ought to leave its expulsion to the efforts of Nature. We proceed in the same manner with respect to the second, if it should place itself as advantageously at the orifice of the *uterus*, and if the mother retain strength enough to deliver herself without help, or with only the assistance usually given in a natural labour ; but when it presents badly, we ought to search for the feet and bring them down. Though it is proper to begin the operation before the *uterus* closes strongly, it is not less advantageous to wait till that *viscus* endeavours to expel it, to go on with the extraction : for it might be dangerous to empty the *uterus* suddenly, and before its own action contributed to it ; as I have shewn in another place.

2200. Twins do not always present so fa-

* I have however seen twins, the least of which surpassed the middle size of children at full time ; its head having three inches eight lines in the transverse diameter.

vourably for their exit, and sometimes that of the first cannot take place without assistance, though it be placed properly and its volume be moderate relatively to the *pelvis* of the mother. This is in my opinion, because the *uterus* cannot press the child equally on all sides, and because its expulsive forces are divided upon both children, so that the first is subjected to only the smallest part of them : as when the second child is placed across. See par. 2206.

2201. Among the positions which twins may take, as well with respect to each other, as to the orifice of the *uterus*, I shall only distinguish the principal and those which are the most common ; because they will suffice to demonstrate what the others require : besides, if I were to undertake to state them all, the greater part would escape my notice, so much may they be varied.

2202. Each twin may present the head at the entrance of the *pelvis*, but in a different manner ; the face of one being upward, downward, or on one side, at the same time that that of the other is turned in a contrary direction. Though they are sometimes placed parallel by the side of each other ; at other times they cross one another obliquely ; so that the
head

head of that whose *trunk* occupies the right side of the *uterus*, rests in the left *iliac fossa*, while the right *iliac fossa* supports the head of the other, whose body occupies the left side of the *uterus*. In this case, delivery cannot take place without assistance; because the direction in which the head of each twin is pressed down, is such that neither of them can advance, and because the two heads recede from each other, turning back on the shoulders, or pressing harder against the sides of the *pelvis*. When they are parallel, that of the two heads which is nearest the middle of the entrance of the *pelvis*, may engage in it and force the other away from it; but when it is got into the excavation, it may also stop and remain there a long time, and even sometimes cannot be expelled from it, though small relatively to that cavity; as I have observed, and as *M. Solayres* remarked before me, as well as many others*.

2203. When

* The head of one of the children forced down by the first pains to the bottom of the *pelvis*, in a woman exceedingly well formed, remained there from Wednesday morning till about five o'clock on Friday afternoon, notwithstanding the natural efforts were very strong: which induced me at that time, which was when I was first called, to extract the child
with

2203. When both children present the head crossing each other in the manner just stated, they must be turned with the necessary precautions, and extracted by the feet. We must in that case begin with the child which is underneath; because in bringing that down, the other will remove itself from the entrance of the *pelvis*, and go towards the *fundus* of the *uterus* into the void which the first leaves as it advances. In fact, it would be very difficult in this case, to pursue any other conduct.

2204. If circumstances foreign to those I have already mentioned, require us to deliver without delay when the two children are parallel to each other, and present the head at the orifice of the *uterus*, it is of no consequence whether we begin with that which is placed at the right side of the *uterus*, or that at the

with the forceps. After its exit, I found a second which presented the feet. I pass over the detail of the state into which the fruitless efforts of Nature, continued so long a time, had thrown the woman: I shall only remark that she speedily recovered, and that the children were extracted living. *M. Solayres* was a witness to a similar case: but both children were dead when he delivered the woman, and one of them was placed transversely under the other, so that they formed a cross.

left :

left: the preference must then depend on the hand which the operator introduces into the womb. In this case, as in all those relative to twins, we must be careful to take hold of the feet which belong to the same child, that we may not bring them both down at once; and as soon as they are without, to remove from the superior strait, not only the head of the first child, but also that of the second, that they may not be entangled in the neighbourhood of that *strait*, and one be brought along by the other, which might happen, just as a knotted cord put into a bottle in order to extract a cork, hooks it and draws it out.

2205. We have seen one of the twins present the head in a favourable situation, and the other the feet. Though such a situation seems to indicate pushing back the latter, and removing them from the entrance of the *pelvis*, that the former may engage in it, experience has proved that that method would not always answer our expectations. It would often be better to begin by extracting the child that presents the feet, taking care to prevent its breast or its head from bringing down the head of

the other; as we observe in a case published in the *Journal de Médecine* *.

2206. The two children may present the feet at the same time, and that case is the most favourable after that where they come without help. Sometimes also we meet with but one foot of one child at the orifice of the *uterus* and both feet of the other. In both cases, it is equally necessary to be careful not to take one foot of each child, supposing them to belong to the same. We must begin then by ascertain-

* *M. Enaux*, of the city of *Dijon*, having been called to a woman whose labour was far advanced, pulled at the child's feet which he found in the *vagina*, and the *trunk* came along easily till he had brought down the arms; but the obstacles then obliging him to slide up his hand under the child's body, he was surprised to find that the head of a second had been drawn down below the projection of the *sacrum*. Not being able to push it back, and having again in vain attempted to extract the first child, he determined to apply the forceps to the head of the second, while an assistant raised up the body which was without, towards the *pubes* of the mother. By this procedure *M. Enaux* delivered the woman of that twin first, which it seemed should have come last. He observes that the children were very small, and that the woman was only at the beginning of the ninth month of her pregnancy. See the *Journal de Médecine* for the month of November 1771.

ing that the two feet belong to the child we wish to extract, and bring them down with one hand, while with the other we remove the extremities of the second, pushing them as high as possible towards one of the *iliac fossæ*. Twins may present the feet successively, that is to say, the second child after the exit of the first, as I have seen. I have also met with some who presented the breech in the same order. In another case, one of the twins presented the head, and the other the feet. (See the note on par. 2202.) In a fourth woman, the relation of the twins was such that they crossed each other; the first presenting the breech in the usual situation, and the second being placed across on the posterior part of the *uterus*. They as well as their mother were victims of the ignorance of a midwife who for six days had not found out that the woman was in labour; and who neither knew how to discover the situation of the first child, nor to estimate the obstacles which opposed its exit, and consequently what the natural powers which tended to expel it, could do. She had been in horrible convulsions from the evening before, when a physician took me to her house, but I only arrived in time to see her expire in

that state: so that I did not deliver her till after her death, of two children which were also dead. The cord, or the hand of one twin may be without, while the other presents the head or a different part, &c.

2207. When the cord of one child is without, if the head of the second is low in the *pelvis*, we ought to extract it with the forceps, especially if we suppose it likely to stay there some time; in order to turn and deliver the other as quickly as possible. But if the head were still above the *pelvis*, or if this child should present any other part, we ought first to search for the feet of that whose cord is come down; that it may suffer less from its compression. When the hand of one precedes or accompanies the head of the other and impedes its exit, we must endeavour to push it back. If the head is too far advanced for that, or if the woman finds herself unable to expel it, we must extract it with the forceps, notwithstanding the presence of the hand or the arm of the other child; but paying the necessary attention to that extremity that it may not be hurt by the instrument. We ought to begin by turning that whose hand is without, if no part of the other be far advanced; proceeding as if there

there were but one child, till the feet be without: for then we must attend to the second child, and see that it be not drawn down by the first. I shall say nothing farther on the delivery of twins: the examples I have stated leaving little to be wished for concerning the rules to be followed in other cases, every accoucheur may easily supply them himself.

A R T I C L E II.

Of false Pregnancy, its Signs, and curative Indications.

2208. It is more difficult to give a good definition of false pregnancy, than to determine its species. It is a state whose symptoms have affinity enough with those of common pregnancy, to make the existence of the latter be believed, and even lead those of the profession whom the woman may consult, into error. I shall state two general species of false pregnancies, viz. one which is a consequence of conception, but whose product has degenerated,

and changed its nature from the first periods; and another which seems absolutely foreign to it. The latter may be formed of water, air, blood, glairy and mucous matter, or by poly-pous excrescences. It receives different denominations, according to the nature of the fluid which constitutes it, as a dropfy of the *uterus*, a *tympanites*, &c.: while the substances which constitute the former species are known by the name of *mole*, or of false conception.

2209. A mole and a false conception seem to be the same thing in their principle, and I cannot see why accoucheurs have made any distinction between them. The remains of a *fœtus*, when they have been found in these spongy masses which characterize a false conception, at most, only indicate that the child died a little later than in other cases, and that some of its parts had been preserved from putrefaction and dissolution: for the germ of an embryo has not less existed in the others, though no traces of it may appear. All these abortive pregnancies were originally the same as those which go happily through their different periods.

2210. The *mole* does not always seem to be of the same nature, being sometimes entirely spongy,

spongy, like the *placenta*, and at other times formed of a collection of little bladders filled with water and attached to a substance pretty like the former, which serves them for a base, and by which they adhere to the *uterus*. Each *hydatid* or bladder has its *pedicle* longer or shorter, and a great number of them hanging to the same stalk, form a kind of cluster, which has made some ignorant and inexperienced people believe that this woman had been delivered of a branch of a gooseberry tree, another of a bunch of grapes, &c. and that these productions were the effects of certain longings in the early periods of pregnancy, which they were not able to satisfy. These masses sometimes acquire so great a volume that they would fill a very large pan. I have assisted some women who had carried them till the seventh month, and others only till the third.

2211. The first species of *mole* does not essentially differ from what constitutes the *placenta* in a common pregnancy. The form of it is only a little different, and it seems less organized, because we do not find in it the *plexus* of arteries and veins, which lines the internal surface of the latter. Those who recollect the origin of those vessels and their uses,

G g 4

will

will not be surpris'd to find nothing of the kind in a *mole*. This mass increases faster than the *placenta* ; but it only enjoys a kind of vegetative life. There is no regular circulation in it ; the blood it receives passes from the *sinuses* of the *uterus* into the *venous sinuses* which we find on its surface, because they are contiguous, and they pour it into the spongy substance of which it is formed. Receiving much more of that fluid than it returns to the *uterus*, it is always so gorged with it, that it detaches itself with the smallest effort ; on which account, the woman often suffers irregular floodings while she carries this foreign body.

2212. These sorts of *moles* almost always have a cavity lined with membranes, which contains more or less water. Though at the time of their exit, we most frequently do not find that fluid, it is because it has been discharged before, either by transudation, or otherwise. In the former case, it is coloured by the blood which the action of the *uterus* expresses from the little cells of the *mole* which are torn. When that fluid is discharged several weeks or months before the expulsion of the *mole*, the mass rolls itself up in some measure, without detaching itself from the *uterus*,
and

and nevertheless continues to increase. Its cavity, not very spacious at the time the waters are evacuated, vanishes or contracts so far that we no longer find it after the expulsion of the *mole* which then appears solid. The cavity, on the contrary, is very apparent when the waters are not discharged before the expulsion of the *mole*, or but a short time before it.

2213. *Moles* present also under two different aspects at the time Nature rids herself of them; being sometimes humid and very full of blood, at other times withered and their spongy substance appearing drier and closer. In the former case, they are much larger, and their expulsion soon follows the shew of blood which always precedes them. In the latter the hæmorrhage manifests itself a long time before; it is moderate, and seems rather a depletion of the spongy mass, than a flooding from the *sinuses* of the *uterus*. I have attended several women who have discharged these *moles* a fortnight, a month, and even six weeks after the cessation of the red discharge. These masses were then, as it were, rolled up, and so dry, that it would have been difficult to have expressed a few drops of blood from them.

2214. The duration of these false pregnancies

cies is uncertain; Nature rids herself sooner or later of the substances that constitute them, according to a variety of circumstances, the greater part of which may be looked upon as accidental. Though it is generally from the third to the fourth month, sometimes it is not till the sixth, the seventh, and even the ninth: it is said that some women have carried such masses for years *.

S E C T I O N I.

Of the Signs which characterize a false Pregnancy.

2215. THERE is no sign which can demonstrate with certainty before the fourth or fifth month, whether a pregnancy be true or false; because it is not till that time that the child manifests itself easily to the touch: nor can we distinguish it even then in many women.

2216. True and false pregnancy have common symptoms, which do not permit us to

* It will be understood that I speak here only of those false pregnancies which I consider as the produce of conception.

discriminate

discriminate them in the first periods. The *menfes* are generally equally suppressed in both cases; if they sometimes appear, it is but in very small quantity, just a shew, and no more. Nauseas, disgusts, &c. accompany a false pregnancy, as well as the true; the belly augments insensibly; but, according to some authors, that augmentation is more apparent in the first months, than in a good pregnancy; which however is not so constant as to allow us to draw the smallest conclusion from it. The breasts sometimes secrete a sort of milky humour, which adds its support to the other symptoms; and internal movements which women of the greatest experience take for the motions of the child, confirm them in the idea that they are really pregnant. All these symptoms may also manifest themselves, though no species of pregnancy should exist; as I have observed in several women.

2217. Touching is the only method which can lead us to the knowledge of the state of the woman; but it must not be limited to the mere application of the hands on the woman's belly, which might also, in these doubtful cases, lead us into error. I have known women who have been pronounced pregnant from
touching

touching the belly, and who were treated as such, and yet were not pregnant at all, in any way; and others who had been assured of the contrary, and nevertheless were delivered some time afterwards. One of the former was attended by one of the most eminent accoucheurs, who believed to the last moment that she was really with child, though she had only a sort of intestinal *tympanites*, which vanished four and twenty or thirty hours after I had declared she was not pregnant. The belly had augmented gradually for about nine months; the *menfes* only just made a shew at each period, &c. and from the fourth month, this woman had felt internal movements which had been taken for those of the child, and which were sufficiently apparent externally, to countenance that opinion.

2218. We ought to touch the woman according to the rules already laid down, to ascertain the volume of the *uterus*; for it is the state of that *viscus* which must guide our judgment. When it is large enough to make us presume a pregnancy of four or five months, we must agitate it a little to excite that motion of the child, known by the name of rolling. The absence of that motion, especially at the
period

period when no one can mistake it, joined to the volume of the *uterus*, characterizes a false pregnancy, when we are certain at the same time that that *viscus* is not affected by any disease. But of what nature is that false pregnancy? That is the most difficult point to determine.

2219. When a false pregnancy is formed of water, the *uterus* is heavy, and we distinguish through its substance, a fluctuation more or less deep. When it is only a *tympanites*, it is light, though equally voluminous. It is not so easy to discover a mole, and to distinguish whether it is in a mass or vesicular: the absence of the signs already stated, and of those of a true pregnancy at a time when the motions of the child should no longer be equivocal, can only lead us to suppose it to be a *mole*.

2220. We cannot infer any thing from the state of the neck of the *uterus* in favour of one of these species of false pregnancy, rather than another; for the development of that *viscus* is always performed according to the same laws, when it contains substances susceptible of growth or augmentation.

2221. A dropfy of the *ovaria*, and that of the *abdomen* itself have often deceived practitioners

tioners into an opinion of the existence of false pregnancies. Although those diseases have their characteristic signs, as well as all others, it must be allowed that it is not easy to distinguish them at the beginning.

S E C T I O N II.

Of the Mechanism by which the Substances which constitute the different Species of false Pregnancy are expelled; and the Assistance they require from Surgery.

2222. THE denomination of false pregnancy (*fausse grossesse*), so often used by authors, to signify that which is formed by substances which cannot be looked upon as the produce of conception, or by that produce when there exists no child, ought to have led them also to signify the exit or expulsion of those substances, by the name of *fausse-couche*; to distinguish it from an abortion, which is a delivery more or less premature.

2223. The mechanism of the expulsion of all these substances, is nearly the same in all cases,

cases, and often differs from that of common labour, only by the violence and duration of the efforts necessary to effect it. When the *uterus* contains nothing but air, water or blood, if those fluids are retained only by the contraction and closing of the orifice, they escape as soon as that contraction ceases, or when the fibres that constitute the edge of the orifice can no longer counterbalance the continual action of the distended and irritated fibres, which form the rest of that *viscus*. It is by the same cause that labour begins, and delivery is performed.

2224. Warm baths, emollient fumigations and injections, might therefore, by weakening the spring of the fibres of the neck of the *uterus*, provoke the discharge of those fluids, before the time fixed by Nature; as might also the dilatation of the orifice procured by the introduction of the finger. But the latter of these methods must not be employed except when we are very certain of the existence of the species of false pregnancy in question. When these collections are the consequence of an obturation, either natural or accidental, of the neck of the *uterus* or of the *vagina*, we must

must render them pervious by means of a cutting instrument: as has been often done on account of a retention of the menstrual blood in young women, and even in those who had had children.

2225. The expulsion of a mole, and of mucous and glairy humours, which are contained in a species of cellular tissue more or less loose, or in separate cysts, does not always take place by a mechanism so simple and so easy to the woman, as the expulsion of water, of blood or air. When it is a mole, labour begins like that in a true pregnancy, and the violence of the pain the woman suffers, is in proportion to the obstacles which oppose the intentions of Nature. This labour is preceded by a sensation of heaviness and lassitude in the limbs, &c. and the greater part of its symptoms resemble those of the true labour of child-birth: the body of the *uterus* hardens at each pain, as in that, and afterwards relaxes; the neck is, at length, effaced, the orifice dilates insensibly, and the substances in question engage in it and clear it, in the same manner as a child does.

2226. The expulsion of a mole must be entirely confided to Nature, when the woman
loses

loses but little blood ; but the accoucheur must extract it when the flooding is abundant : proceeding for that purpose as in delivering the after-birth after an abortion. See the article on delivering the after-birth.

A R T I C L E I I I .

Of Abortion, or premature Delivery, its Causes, Signs, and what the Accoucheur must do in those Cases.

2227. ABORTION is the expulsion of a child before the usual period of pregnancy, and especially before that in which it is strong enough and sufficiently developed to live after its birth.

S E C T I O N I .

Of the Causes of Abortion, and its Symptoms.

2228. A GREAT number of causes may produce abortion. Sometimes it is the consequence of acute or chronical diseases, which affect the woman during pregnancy ; of a sanguine plethora,

thorax, or a want of food; of a cough, or straining to vomit; of a stiffness in the fibres of the *uterus*, which cannot yield and develop themselves sufficiently; of some tumor which affects that *viscus*, of its extreme sensibility, or of its weakness; of a violent passion, of a sudden fright, or an external percussion, by a blow, a fall, &c. At other times it depends on the state of the child, on its diseases, or its death; on affections of the *placenta*, its insertion over the neck of the *uterus*, &c. I shall not enter here into the mode in which all these occasional causes of abortion act, because the explication of them should seem more properly to belong to a treatise on the diseases of women and children, than to this.

2229. The greater part of these causes may produce an abortion at any period, of pregnancy indifferently; and the others do it pretty constantly at the same period in the same woman, but in some sooner, in others later. I know women who have never carried a child beyond the third month; others the fourth, fifth or sixth, without being influenced by any apparent cause. So many abortions seem to have been only a consequence of the extreme sensibility of the *uterus*, and of the rigidity of its

its fibres which could not extend beyond a given point, without being violently irritated, and without contracting. I have also observed that other women, after having miscarried several times at one of the stated periods, have carried their children a little longer in the subsequent pregnancies, and have at last gone nearly the usual time, by employing the precautions necessary to diminish the sensibility of the *uterus*, relax its fibres, and dispose them to a more considerable extension.

2230. Though abortion sometimes happens without any apparent cause producing it, and without being announced by any precursive symptom, at other times the woman suffers troublesome pains towards the loins and in the *uterus*, accompanied by a sensation of heaviness at the bottom of the belly, a long time before; and it is often preceded by a flooding, sometimes moderate, sometimes abundant, according to the cause which has determined it.

2231. The consequences of abortion are more or less disagreeable to the mother and child, according to the nature of the cause which provokes it, the force with which it acts, and the derangement it produces in the functions. Abortion is not dangerous in itself;

it takes place by a mechanism similar to that of common labour, and its subsequent symptoms differ little from those of the latter. Among the children who are born before the period of the seventh month, some are dead before their exit, and the greater part of the others die soon afterwards. It has however been asserted that some have been preserved who came at six months, five and even four and an half, and that, notwithstanding the weakness and imperfection naturally attached to those periods, they have lived to an extreme age. Such examples, supposing the women were not deceived in their reckoning, are too rare and too extraordinary, for us to flatter ourselves we should be able to preserve children born at these latter periods, whatever care we might take of them: we must not however abandon them, nor neglect that care.

S E C T I O N II.

Indications in Cases of Abortion.

2232. WE might often prevent abortion, if we were perfectly acquainted with its cause,
even

even when the labour of it is already begun. A very plethoric woman felt the pains of childbirth towards the seventh month of her pregnancy, and the labour was very far advanced when I was called to her assistance; since the orifice of the *uterus* was then larger than a half-crown. Two little bleedings at the arm restored a calm, so much that the next day the orifice in question was closed again, and the woman went the usual time. Food of easy digestion prudently administered, quieted a labour not less advanced in another woman, where it was suspected to be the consequence of a total privation of every species of nourishment for several successive days: delivery did not take place till two months and an half afterwards, and at full time. Emollient glysters, and a very gentle cathartic, procured the same advantage to a third woman, in whom the labour pains came on between the sixth and seventh month of pregnancy, after a colic of several days continuance, accompanied with a diarrhœa and tenesmus, &c. &c. &c.

2233. If such means have been employed with so much success in cases where abortion seemed on the point of taking place, with more

reason ought we to expect good effects from them, when the cause that tends to provoke it has not yet exerted its action on the *uterus* to that extreme degree. I know women who have not carried their children the full time, till after they had miscarried three or four times, at six weeks, two, three, and four months, and who have been indebted for that advantage entirely to bleeding at the arm, performed a few days after the first time the *menfes* had failed to appear, and repeated during the course of pregnancy as soon as the smallest symptom of plethora was perceived. Bleeding is not less advantageous to those women in whom the sensibility of the *uterus*, its spasmodic contractions, the stiffness of its fibres, &c. have frequently occasioned abortion, than to those of a sanguine constitution. Diluting drinks, such as veal or chicken water; and especially the warm bath must not be neglected in those cases. In women attacked with convulsions which depend only on those same causes, antispasmodics succeed the best; it is often important to begin the use of them betimes, and continue them to the end of gestation. We must proceed differently when the weakness of the

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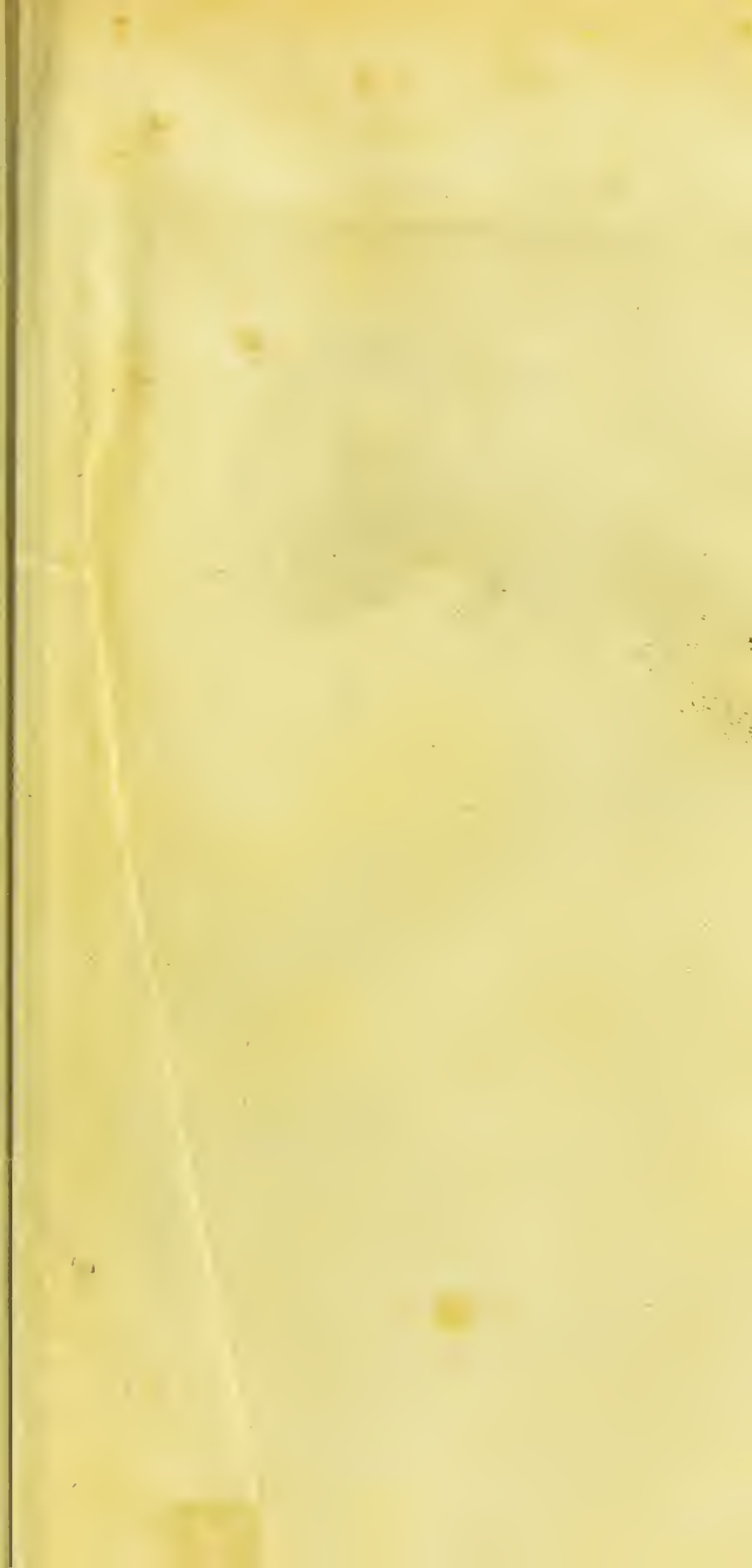
the woman is the cause of abortion; in that case, we must be sparing of her blood, prescribe rest, and endeavour to strengthen her.

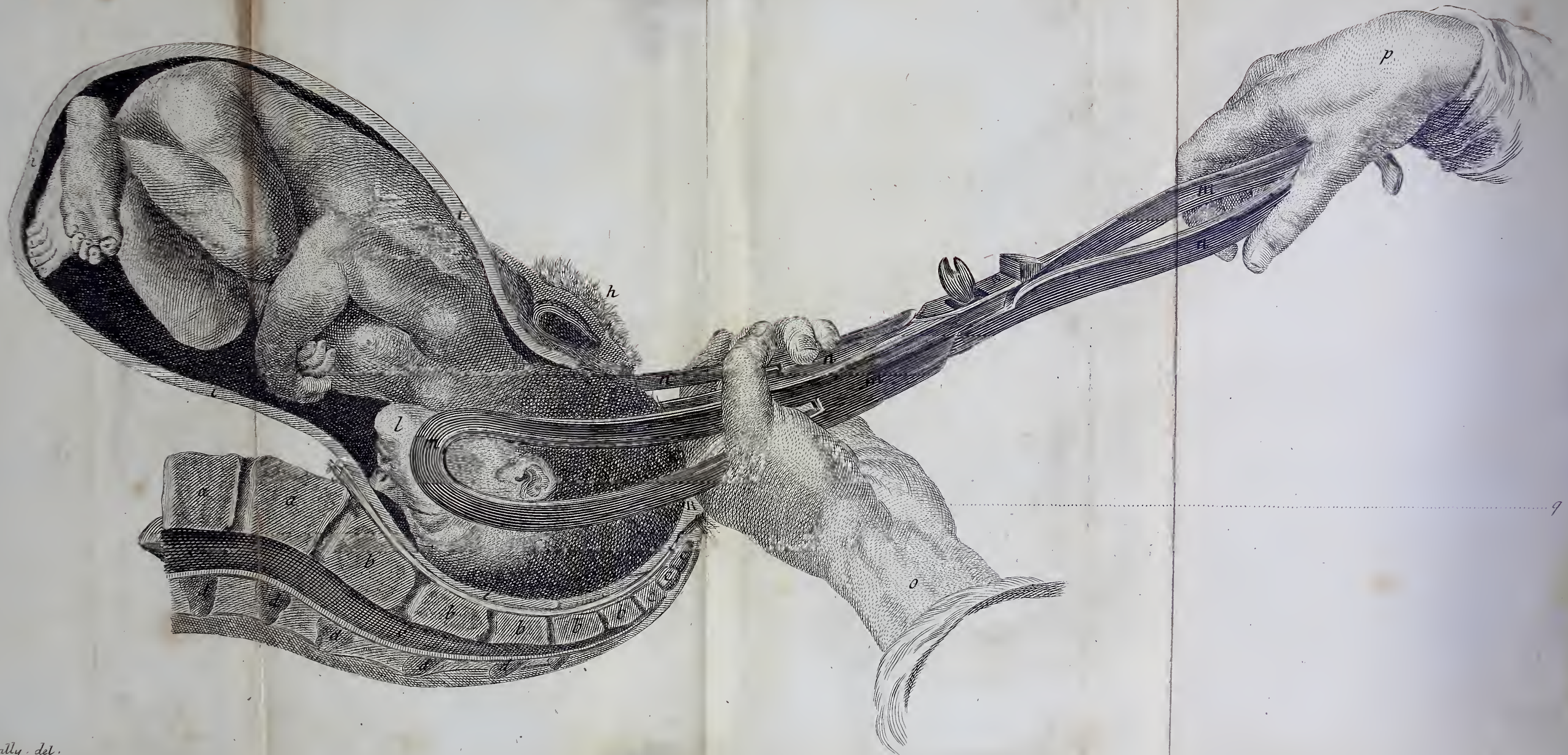
2234. When the labour of an abortion is so far advanced that the pains are strong, the orifice of the *uterus* dilated, and there is no longer any hope of calming it, we must conduct ourselves according to circumstances. The expulsion of the child, as well as of the *placenta*, must be left to Nature, when no other accident attends it; because she delivers herself of both in the same manner as at the usual epoch of labour. In the first two or three months of pregnancy, Nature expels the whole produce of conception at once, unless under the vain pretence of assisting her, we open the membranes. The labour is easier to her in that way, than if the waters and the *fœtus* were to be discharged first. But we observe the contrary after that period; then the waters drain off sooner or later, the *fœtus* is delivered next, and the *placenta* is not expelled till the last. See par. 990 and following.

2235. We ought therefore to avoid tormenting and fatiguing the woman by touching her too frequently in the course of an abortive labour, when it takes place in the first two or

three months of pregnancy ; and more particularly opening the membranes with a view of accelerating the exit of all the contents of the *uterus* : for that is the way to retard their expulsion and prolong the labour. The *uterus* being lightened by the discharge of the waters of part of the load which incommoded it, contracts for a time with much less vigour ; its action weakens, and often does not become brisk again for a long time.

2236. When abortion takes place at a more advanced period, besides the accidental circumstances which may complicate the labour of it, and prescribe particular indications, we must attend also to the situation of the child, or the manner in which it presents ; for it cannot always come without help, especially after the sixth month. We therefore proceed in that respect, and in all cases where any accidents occur, as if the woman were at full time ; or else in the manner laid down in the article which treats of the delivery of the after-birth, after an abortion. The subsequent symptoms in all these species of abortion being nearly the same as after the delivery at full time, the regimen the woman ought to observe should be the same in both cases.





EXPLANATION OF THE PLATES

at the End of this Volume.

Explanation of the Eighth Plate.

THIS plate represents a vertical section of a well formed *pelvis*, which shews the child's head entirely in the cavity, in the most favourable position relatively to the inferior *strait*, and taken between the blades of the forceps, in the manner in which it ought to be done in that case, when accidental circumstances require us to employ this means to terminate the delivery (see par. 1761, and following). All the parts of this figure are reduced to about half their natural dimensions.

a, a, The bodies of the two last lumbar *vertebræ*.

b, b, b, b, b, The five false *vertebræ* of the *sacrum*.

c, c, c, The three bones of the *coccix*.

d, d, d, d, d, The spinous *apophyses* of the last lumbar *vertebræ* and of the first false *vertebræ* of the *sacrum*.

e, e, The

e, e, The canal of the same bony pieces with its ligamentous covering.

f, f, The *intestinum rectum*.

g, The cartilaginous and ligamentous face of the left *os pubis*, making part of the *symphysis*.

h, The *mons veneris*.

i, i, i, i, This circle represents the vertical section of the *uterus*, the right hemisphere of which is taken away, to shew the attitude of the child.

k, The occipital extremity of the child's head.

l, The chin, or the anterior extremity of the head. A line drawn from one of these letters to the other, traverses the head according to its greatest length; and it is this line which I call the oblique diameter.

m, m, m, The female branch of the forceps, placed properly at the right side of the *pelvis*, and on the child's right ear.

n, n, n, The male branch of the forceps, placed at the left side of the *pelvis* and of the head.

O, The left hand which grasps the body of the instrument near the *vulva*, placed as I have recommended in par. 1765.

p, The right hand applied to the extremity of the instrument, as it ought to be done, in the case represented.

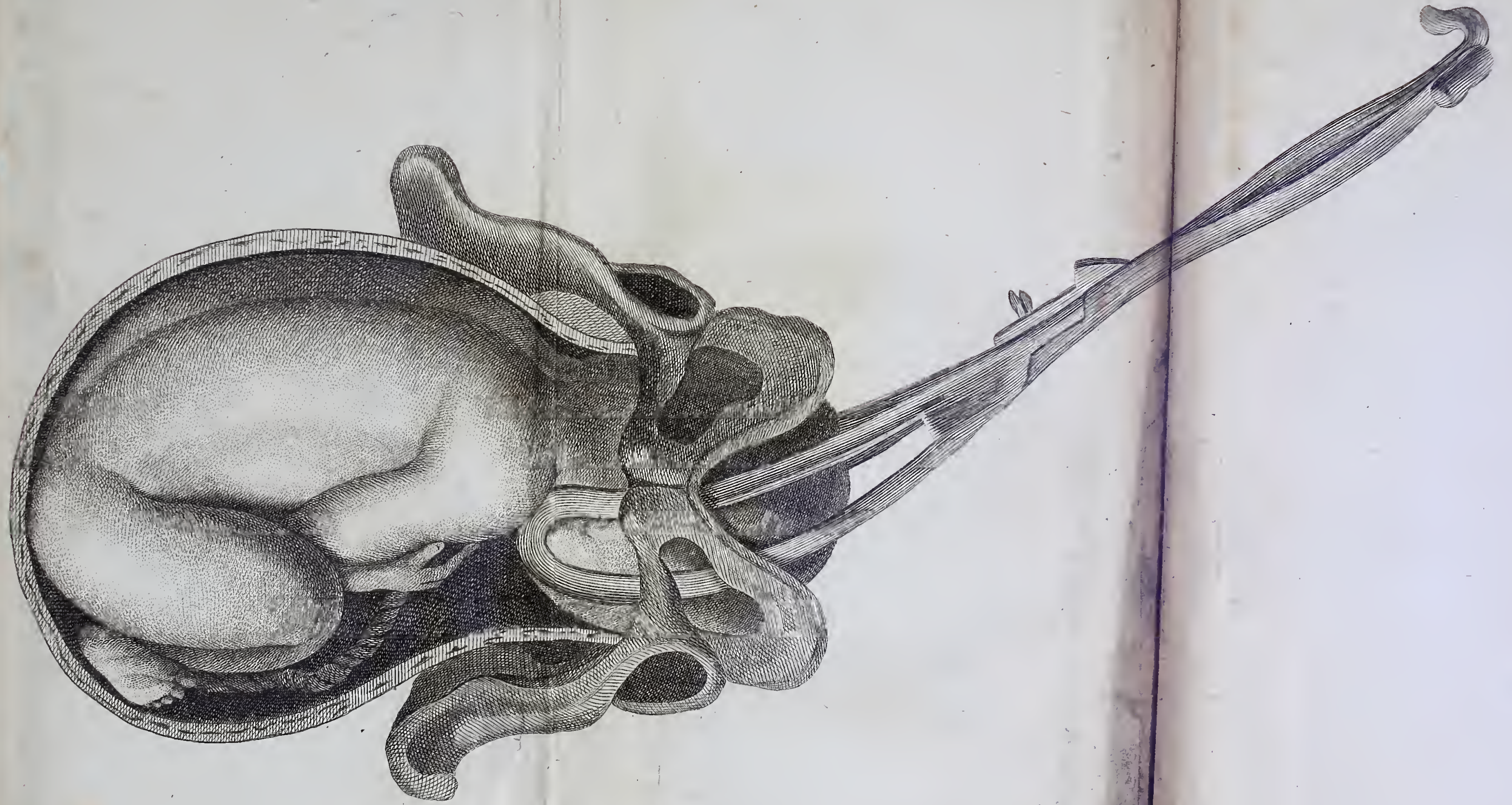
q, R, The dotted line between these two letters, serves to determine nearly the height at which the extremity of the forceps ought to be held, when the head comes to the bottom of the *pelvis*, and is in the position represented; as I have described it in par. 1763.

To extract the child's head in this case, we ought as we pull it towards us, to raise the extremity of the forceps by insensible degrees towards the woman's belly; so that the *occiput* may turn on the inferior edge of the *symphysis* of the *pubes*, and that the chin, as it recedes from the breast, may describe a curved line, beginning near the letter l, to terminate at R, passing over the i, which is in the middle of the curve of the *sacrum*, and over the f, before the point of the *cocix*. This plate may also serve to illustrate what has been laid down concerning the second position of the crown of the head with respect to the inferior *strait*. See par. 1766 and following, to 1768, inclusively.

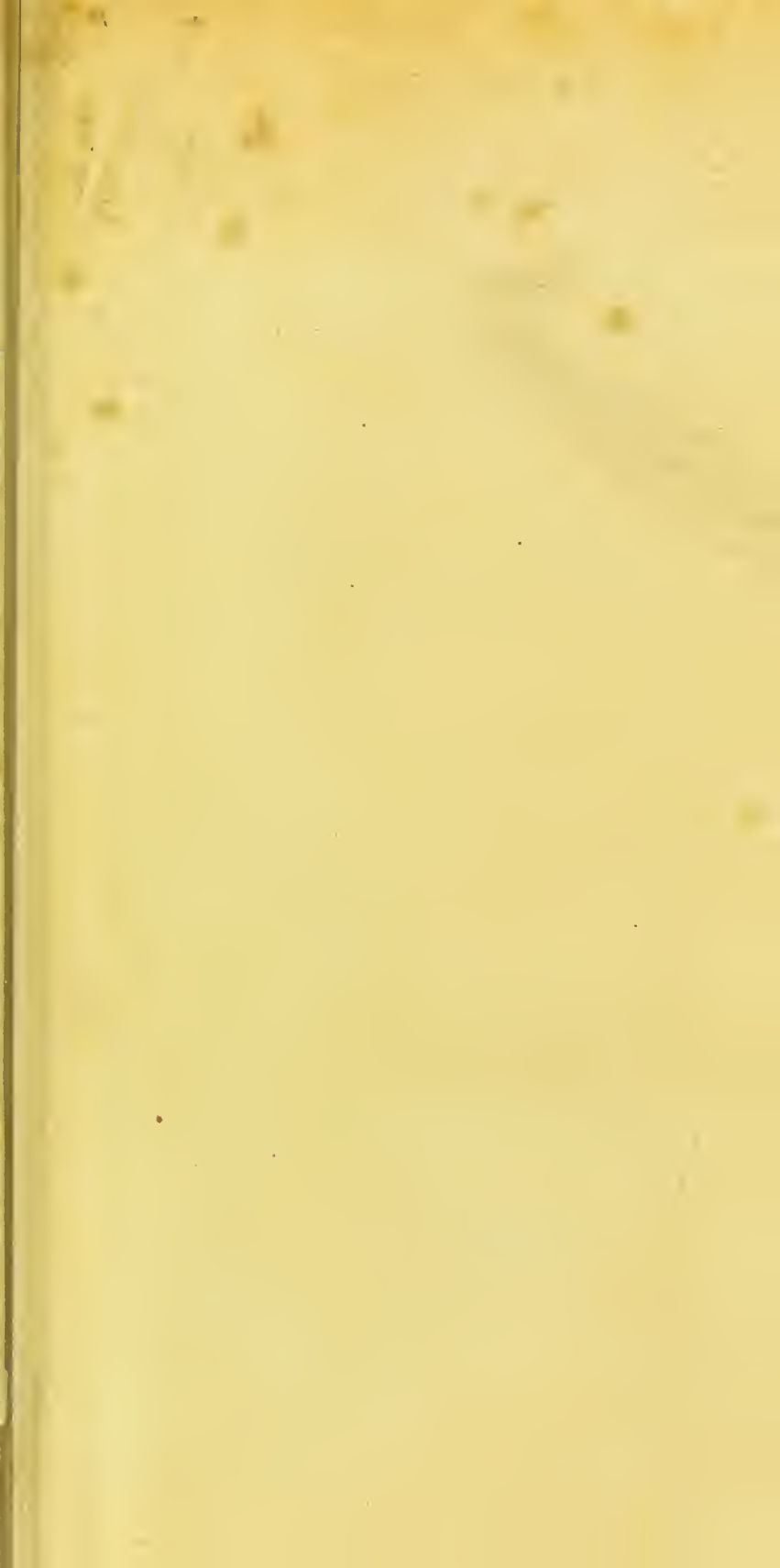
Explanation of the Ninth Plate.

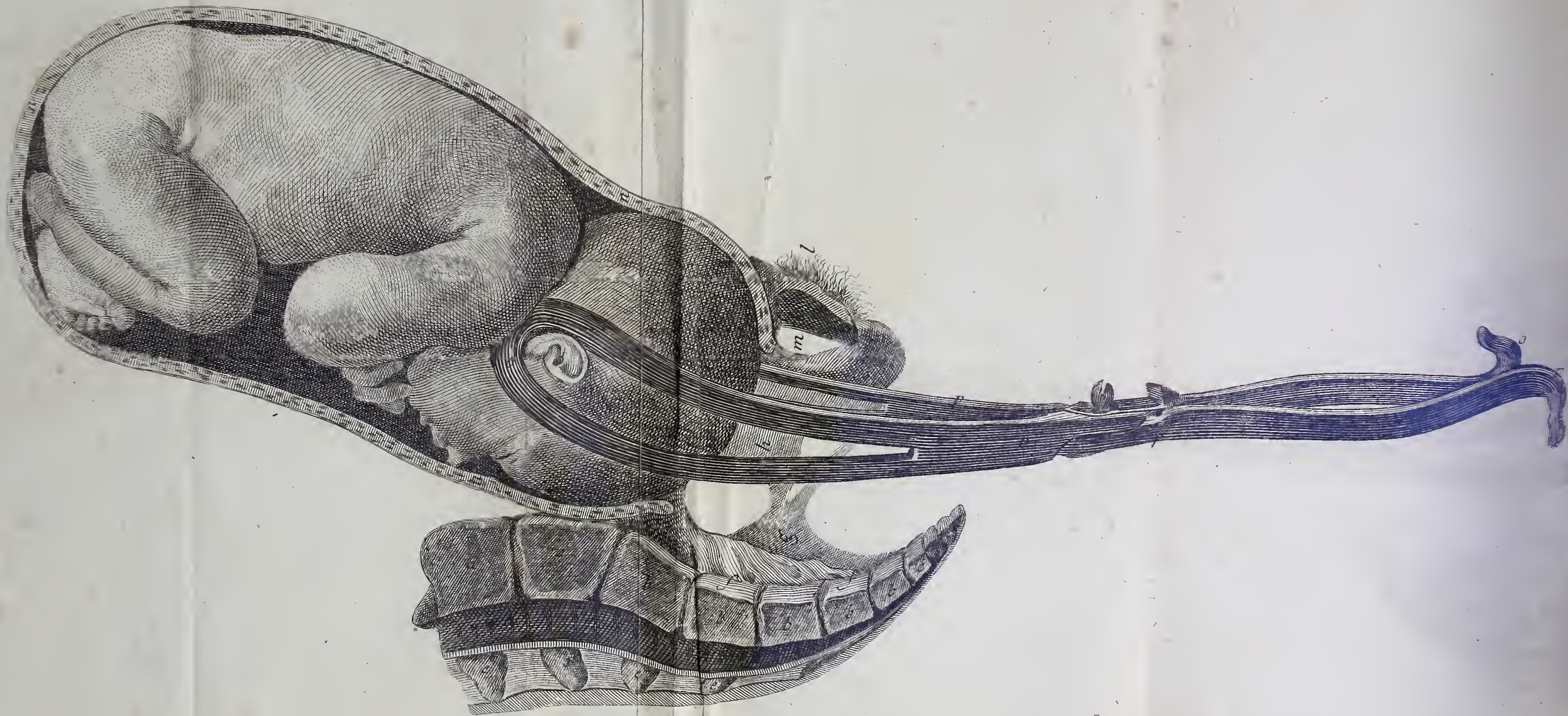
THIS plate represents a *pelvis* the proportions of which are also reduced to the half of what they are when it is well formed. The child, surrounded by a circle which indicates the vertical section of the *uterus*, is in that position in which the head usually passes through the superior *strait*, and which it sometimes preserves after it is arrived at the bottom of the *pelvis*. We easily perceive that the *occiput* is behind the left *foramen ovale*, and the face opposite the right *sacro-iliac symphysis*; that the forceps grasp the head as I have recommended in par. 1772 and 1773, and is in such a relation to the *pelvis*, that one of the blades is under the right *acetabulum*, and the other towards the left *ischiatric* notch and before the *sacrum*. I have substituted this plate for the sixth of my first edition, and have omitted the referring letters.

To extract the child's head in the position represented in this plate, we must first turn it in the *pelvis*, so as to carry the forehead into the hollow of the *sacrum*, and bring the *occiput* under the *symphysis* of the *pubes*; that is to say,
 we









we must in the first instance place the head as represented in the eighth plate.

The forceps must be placed exactly in the same manner when the head has advanced with the forehead behind the left *foramen ovale*, and the *occiput* to the right *sacro-ischiatic* notch. But before we endeavour to extract it, we must bring the forehead under the *pubes*, so that the forceps may be as represented in the eighth plate. See par. 1776 and following, as well as par. 1768.

Explanation of the Tenth Plate.

THIS plate represents the same vertical section of the *pelvis*, as the eighth; but the head is placed so that the *occiput* is over the *pubes*, and the forehead against the projection of the *sacrum*, its greatest diameter answering to the smallest of the superior *strait*.

a, a, The two last lumbar *vertebræ*.

b, b, b, b, b, The false *vertebræ* of the *sacrum*.

c, c, The *coccyx*.

d, d, The canal which lodges the extremity of the spinal marrow.

e, e, e, e, The spiny *tubercles* of the last lumbar

bar vertebræ, and of the first pieces of the *sacrum*.

f, f, The flattened portion of the anterior face of the *sacrum*.

g, The *sacro-ischiatic* ligament.

h, The internal face of the left *os ischium*.

i, The branch of the left *os pubis* and *ischium* seen perspectivevely.

k, The cartilaginous and ligamentous *fascette* of the left *os pubis*, making part of the *symphysis*.

l, The *mons veneris*.

m, Part of the left *foramen ovale*.

n, n, n, A circle representing the section of the *uterus* in the same direction as that of the *pelvis*.

o, o, o, The female branch of the forceps applied on the right side of the head and of the *pelvis*, as it must be in this position.

p, p, p, The male branch of the forceps applied on the left side of the head and *pelvis*.

All the parts of this figure being reduced to about half their natural size, if we recollect the dimensions of a well formed *pelvis*, and their relation to those of a child's head of the usual size, we shall see that the obstacle which opposes delivery in this case, does not
arise

arise from any defect of conformation, but only from the position of the head. The indication is easy to perceive. It will appear that we need only turn the *occiput* from over the *pubes*, by inclining it towards the left side of the *strait*, as represented in the eleventh plate, to put the head into a condition to descend easily : as well as that we must bring it to the position expressed in the eighth plate to enable it to clear the inferior *strait*. See both those plates ; and for the method of operating, what I have said from par. 1790 to par. 1796 inclusively.

The tenth plate may also serve to throw more light on what I have recommended, in the case where the forehead of the child rests on the edge of the *ossa pubis*, and the *occiput* on the top of the *sacrum* ; for the forceps must then be disposed with respect to the *pelvis*, as this plate represents them. See par. 1798 and following. It is on this model also that the forceps must be conducted, when the head is locked lengthwise between the *pubes* and *sacrum* superiorly.

Explanation of the Eleventh Plate.

THIS plate represents the half of a *pelvis* of three inches six lines in the small diameter of its entrance, cut vertically through the middle of the *sacrum*, the *coccix* and the *pubes* *. The child's head is so situated that the *occiput* answers to the left side of the *strait*, and the forehead to the right side; the right ear being over the *pubes*, and the left ear above the *sacrum*. It appears grasped by the blades of the forceps, as I have prescribed in par. 1806 and following, to 1809, inclusively. The instrument placed in this manner, presents to the view only its posterior edge, and the external face of one of its branches.

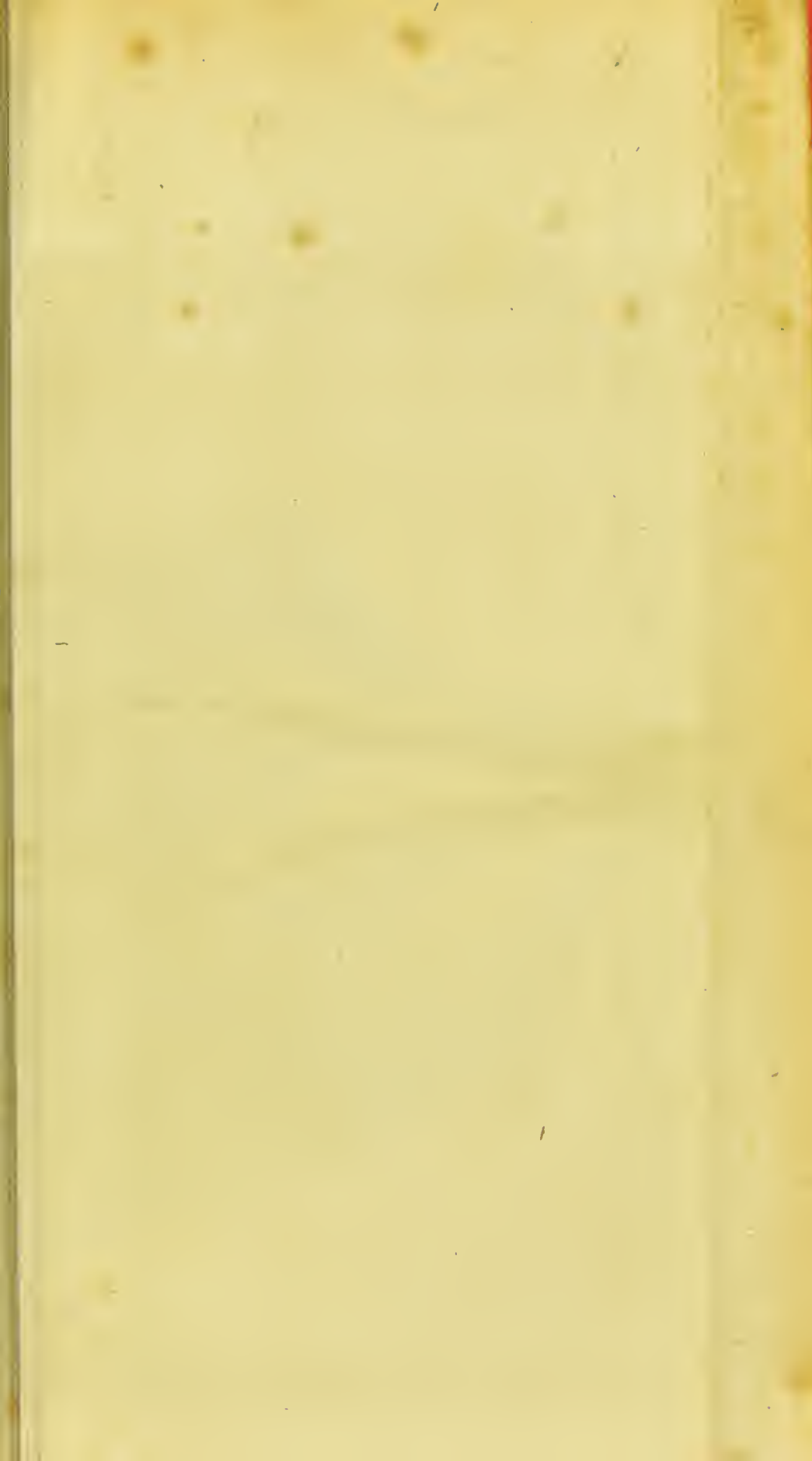
a, a, The last *lumbar vertebrae*.

b, b, b, b, b, The five false *vertebrae* of the *sacrum*.

c, c, The *coccix*.

* Its dimensions have not been reduced scrupulously to the half of their natural size : which will not be of any great importance here ; my intention not being to prove, by means of this figure, the possibility of the operation I describe, but to throw some light upon it.

d, d, The



Pl. XI.



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deuxième jour

d, d, The canal which lodges the end of the spinal marrow.

e, e, e, e, e, The flattened part of the anterior face of the *sacrum* and *coccix*.

f, f, f, f, Spiny *tubercles* of the last *lumbar vertebræ*, and of the first false *vertebræ* of the *sacrum*.

g, The *sacro-ischiatic* ligament.

h, The small *sacro-ischiatic* ligament.

i, k, The internal face of the body and of the *tuberosity* of the left *ischium*.

l, The *foramen ovale*.

m, The cartilaginous and ligamentous face of the left *os pubis* making part of the *symphysis*.

n, The *mons veneris*.

o, o, o, The male branch of the forceps applied on the left side of the head and before the *sacrum*.

p, p, p, The female branch of the same instrument, placed under the *pubes* and on the right side of the head. See par. 1807 and the following one, for the method of conducting them.

q, q, q, This circle represents a vertical section of the *uterus*, the right side of which has been taken away to shew the attitude of the child.

The situation of the head, as represented in this plate, is the best it can take with respect to the superior *strait*, when it is a little narrow from before backward. It is in that direction that we ought to place it, if it should not present so naturally, as I have recommended in the explanation of the preceding plate, with this difference however, that the *occiput* should come a little more towards the left *acetabulum*. After having brought it down to the bottom of the *pelvis* in this position, we turn it so as to bring the *occiput* under the *pubes*. See par. 1796, in order to finish the extraction as stated in par. 1765.

Explanation of the Twelfth Plate.

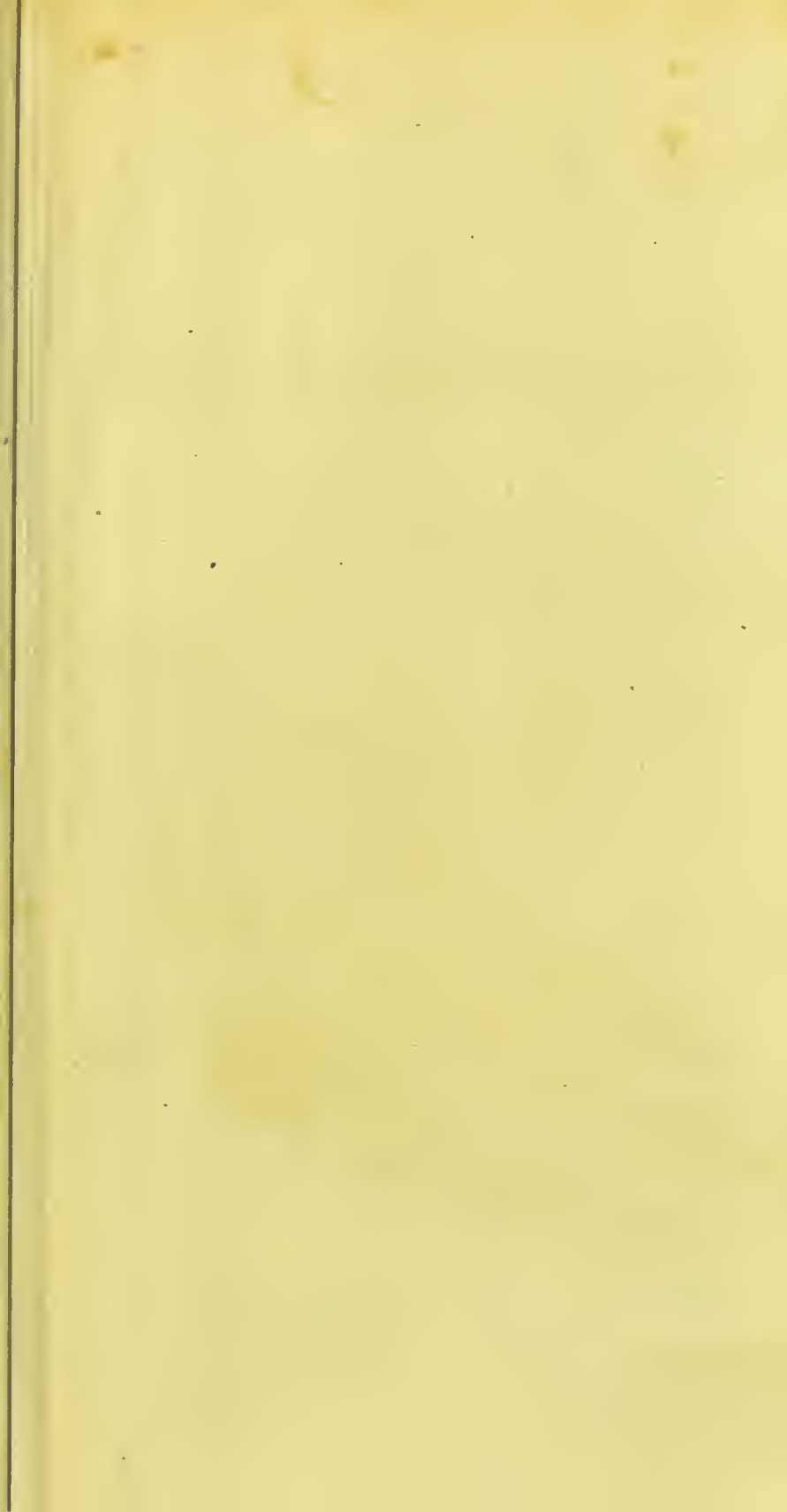
THIS figure represents another well-formed *pelvis*, the anterior part of which is taken away to shew one of the transverse positions of the face, and throw more light on what I have said concerning the mechanism of this species of labour.

a, a, Part of the *iliac fossæ*.

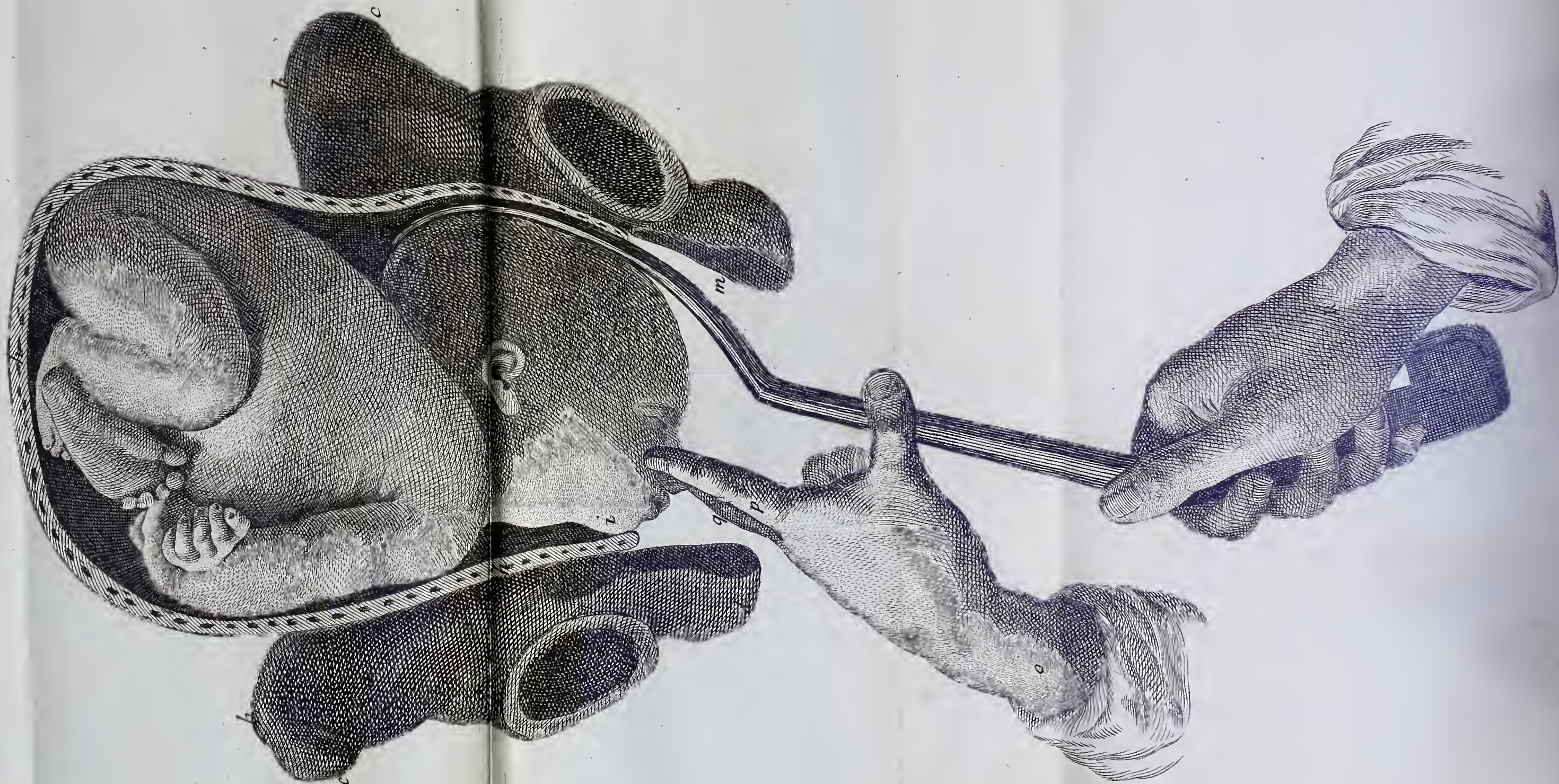
b, b, Part of the *cristæ* of the *ossa ilia*.

c, c, The anterior superior spines of the *ossa ilia*.

d, d,



Pl. XII.



d, d, The *ischiatric tuberosities*.

e, e, The *acetabula*.

f, f, The thickness of the *ossa ischia* sawn through vertically before their tuberosities.

g, g, The bodies of the *ossa pubis* sawn through before the *acetabula*.

h, h, h, A circle representing a vertical section of the *uterus*, the anterior part of which is taken away in order to shew the child.

i, The child's chin.

k, The posterior extremity of the head.

l, l, l, The lever applied along the crown of the head, the extremity of it extending beyond the posterior *fontanelle*.

m, The left lateral and inferior part of the *pelvis*

n, A portion of the right lateral part of the *uterine* cavity. We shall see hereafter the use of this letter.

o, The left hand.

p, q, The fore and middle fingers placed at the sides of the nose, and pressing against the upper jaw.

R, The right hand grasping the extremity of the lever.

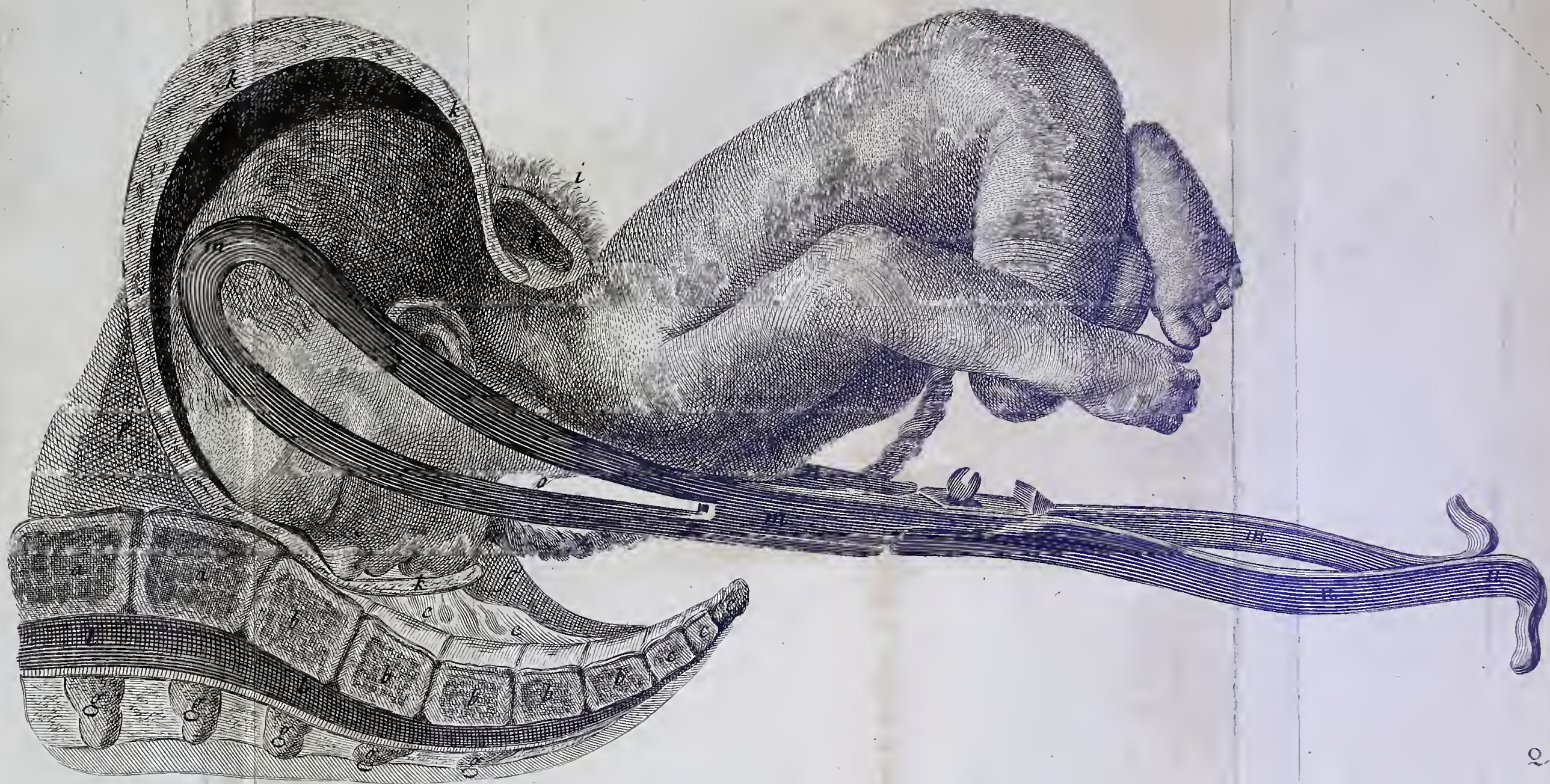
I have preferred this position of the face to the other three, because it is that which we

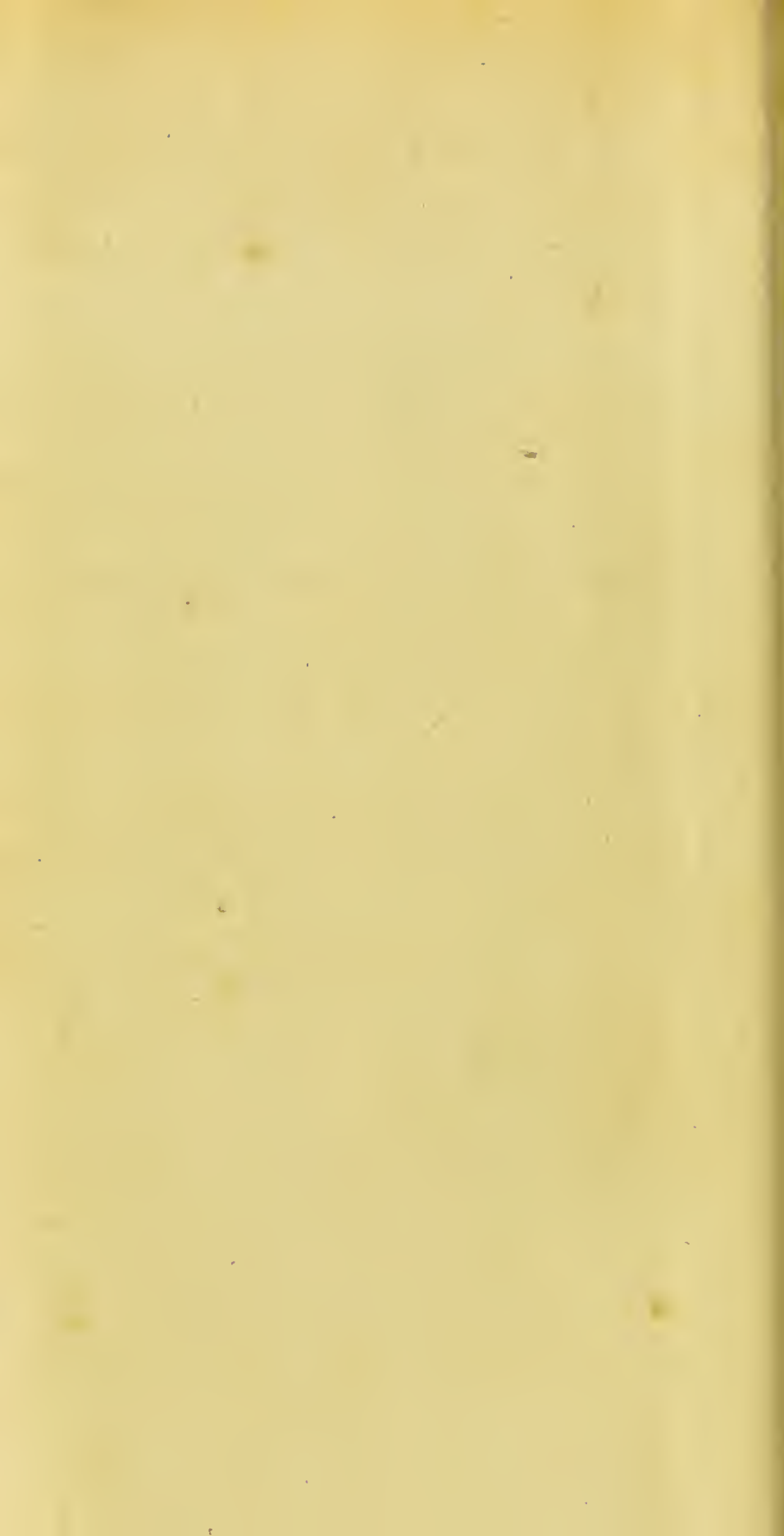
oftenest meet with. When the head is strongly engaged, and we cannot rectify it by the method recommended in par. 1343, we apply the lever as represented here, to bring down the *occiput* marked by the letter k, to that part of the *pelvis* indicated by the letter m, while with the two fingers p, q, we push up the chin i, as high as the letter n. See par. 1836 and following.

It is the same end we ought to have in view in the three other positions of the face, of which I have treated in the body of the work. The lever, when circumstances require its use, must be applied relatively to the head, in the manner here represented, but differently with respect to the *pelvis*; since it must be sometimes placed under the *pubes*, and sometimes before the *sacrum*, or on one side. See par. 1825, 1830, 1836, and 1838.

Explanation of the Thirteenth Plate.

THIS figure represents the same vertical section of a *pelvis*, as the others, and is reduced in the same degree. The child's body is entirely disengaged from it, and the head grasped by the forceps is retained at the superior *strait*,
with





with the *occiput* over the *pubes*, and the lower part of the forehead against the projection of the *sacrum*.

a, a, The last *lumbar vertebræ*.

b, b, b, b, b, The false *vertebræ* of the *sacrum*.

c, c, c, The *coccix*.

d, d, The canal of the last *lumbar vertebræ* and of the *sacrum*.

e, e, The flattened portion of the anterior face of the *sacrum*.

f, The left *sacro-ischiatic* ligament.

g, g, g, g, g, Spiny *tubercles* of the aforefaid *vertebræ*.

h, The cartilaginous and ligamentous *facette* of the left *os pubis*, making part of the *symphysis*.

i, The *mons veneris*.

k, k, k, k, A circle representing the vertical section of the *uterus*, the right side of which is taken away to shew the head and the instrument.

l, l, A portion of the *placenta* attached to the superior and anterior part of the *uterus*.

m, m, m, The female branch of the forceps, applied on the left side of the head, which answers to the right side of the *pelvis*.

n, n, The male branch of the forceps, ap-

plied at the left side of the *pelvis* and the right side of the head.

o, Part of the left small *sacro-ischiatic* ligament.

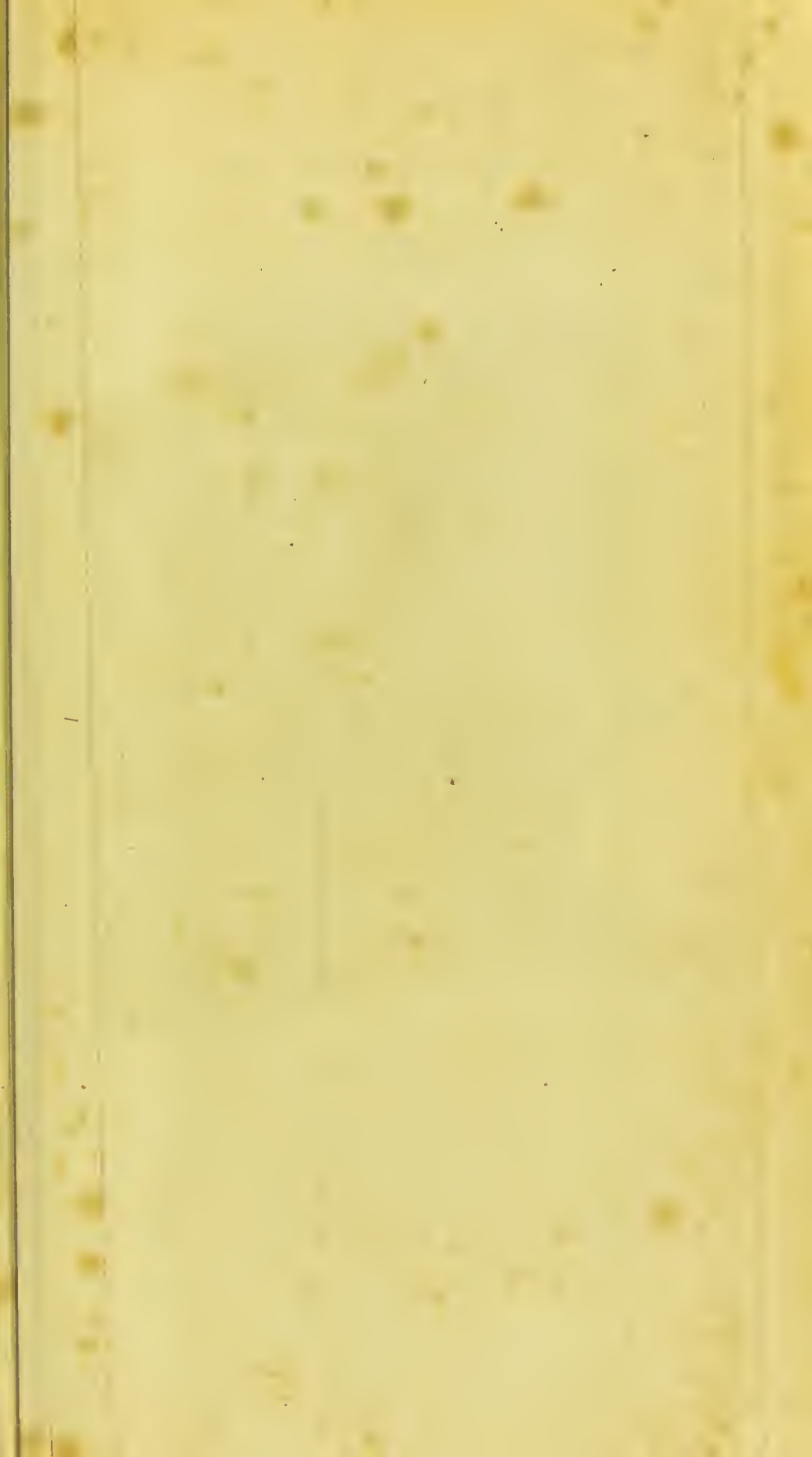
P, Part of the left *os ilium*, the rest being concealed by the head.

q, The point to which we ought to lower the extremity of the forceps, in bringing the head down into the cavity of the *pelvis*.

R, The point of elevation at which the extremity of the forceps must be held, when the head occupies the bottom of the *pelvis*, after having replaced the face underneath, as directed in par. 1856 and 1857.

The relation of the dimensions of the child's head to those of a well formed *pelvis*, is such that it might pass through the *strait* in the direction in which it is; but it would suffer much stronger frictions than in passing in a transverse situation; which is certainly sufficient to determine us to place it so. This precaution is of the utmost importance, when the superior *strait* is a little contracted from before backward, and we must not then fail to give the head a transverse situation before we make the smallest effort to bring it down. See par.

1857.





1857. At the same time that we place the head thus, we lower the extremity of the instrument towards the point q, as much as the external parts of the woman will permit, and continue to do it in proportion as the head descends, inclining it at the same time towards the under part of the left thigh. When the greatest thickness of the head has passed the superior *strait*, we begin to raise the extremity of the forceps again towards the point R, making it describe a curved line, whose convexity is towards the left thigh of the woman, bringing the head a quarter turn back again to place the face underneath, and continue to disengage it as directed in par. 1856.

Explanation of the Fourteenth Plate.

THIS plate also represents a vertical section of the *pelvis*; but it is supposed to have only three inches six lines in the small diameter of its entrance. The base of the *cranium* is engaged in it in a transverse direction, the *occiput* being turned towards the left side, and the face to the right side; so that the greatest thickness of the head is still above the *strait*.

a, a, The two last *lumbar vertebræ*.

I i 4

b, b, b, b, b,

b, b, b, b, b, The five false *vertebræ* of the *sacrum*.

c, c, c, The three pieces of the *coccix*.

d, d, The canal of the aforesaid *vertebræ*.

e, e, e, e, The *spinous apophyses* of those same *vertebræ*.

f, f, Part of the anterior face of the *sacrum*.

g, The left *sacro-ischiatic* ligament.

h, The cartilaginous and ligamentous *fascette* of the left *os pubis* making part of the *symphysis*.

i, The *mons veneris*.

k, k, k, k, A circle indicating the section of the *uterus* in the same direction as that of the *pelvis*.

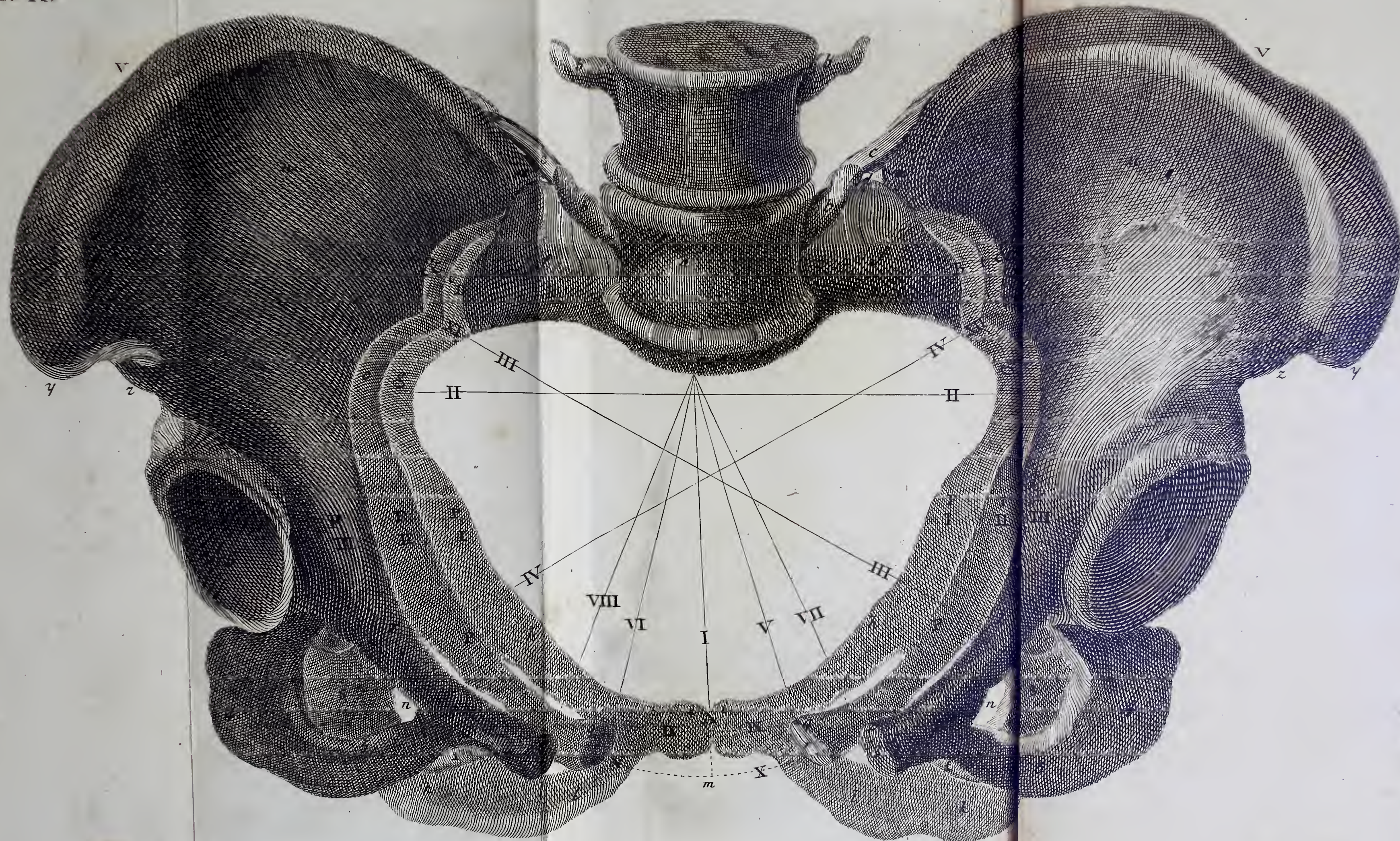
l, l, A portion of the *placenta* attached to the *fundus* of the *uterus*.

m, m, m, The female branch of the force , applied on the left side of the child's head, and under the *symphysis* of the *pubes*.

n, n, n, The male branch of the forceps, applied on the right side of the head and before the *sacrum*: the position of the instrument is such, that we only see the posterior edge of its two branches, and the external face of one of them.

o, A dotted line in the direction of which the





the instrument must be pulled to bring the head down into the *pelvis*.

p, The point of elevation at which the extremity of the forceps must be held, when the head is brought down to the bottom of the *pelvis*, after having turned the face into the curve of the *sacrum*. In raising this part of the instrument thus, we make it describe a curved line like that described at the end of the explanation of the thirteenth plate.

The blades of the forceps are placed according to the principles laid down in par. 1865 and 1866. We also observe in this plate the manner in which the child's body must be inclined towards the woman's left thigh during the introduction of the instrument, and while we bring down the head into the excavation.

Explanation of the Fifteenth Plate.

THIS plate represents a deformed *pelvis*, which has but two inches seven lines in the small diameter of its superior strait. The figure of that *strait* is triple: the first represents it in its natural state; the second, the *ossa pubis* separated eighteen lines; and the third with a separation

ration of two inches and an half; in order to express to the least attentive observer, the quantity of amplification which the section of the *symphysis* in such a *pelvis* can produce, at the degrees of separation marked.

Figure the First.

a, a, The two last *lumbar vertebræ*.

b, b, b, b, The transverse *apophyses* of those same *vertebræ*.

c, c, Ligaments which go from the transverse *apophyses* of the last of those *vertebræ* to the middle and posterior part of the internal lip of the *crista* of the *os ilium*.

d, d, Other ligaments which descend from those same *apophyses* to the superior part of the *sacro-iliac symphyses*.

e, The projection of the *sacrum*.

f, f, The lateral parts of the base of the *sacrum*.

g, g, Part of the *ossa ilia*: the rest of those bones being concealed by the second and third figures.

h, h, The bodies of the *ossa pubis*.

i, i, The angles of the *ossa pubis*.

k, k, The *ossa ischia*.

l, l, The

l, l, The branches of the *ossa ischia* and *pubis*.

m, The arch of the *ossa pubis*, at the fore part of the *pelvis*.

n, n, The *foramina ovalia*, concealed by the *ossa pubis* of the second and third figures.

A, The *symphysis* of the *ossa pubis*, seen perspectivevely.

B, B, The *sacro-iliac symphyses*.

Figure the Second.

o, o, Part of the *ossa ilia*.

P, P, The bodies of the *ossa pubis*.

q, q, The angles of the *ossa pubis*.

r, r, Articular *facettes* of the *ossa pubis*, seen perspectivevely.

s, s, The *ossa ischia* : they appear behind the *foramina ovalia* of the third figure.

f, f, Very small portions of the branches of the *ossa pubis*.

t, t, Articular *facettes* of the *ossa ilia*, corresponding to similar ones which are observed at the sides of the *sacrum*.

Figure the Third.

u, u, The *ossa ilia*.

V, V, The *cristæ* of those same bones.

x, x, The angle formed by the internal lip of the *crista* in the middle and posterior part of its length.

y, y, The superior anterior spines of the *ossa ilia*.

z, z, The anterior inferior spines of the *ossa ilia*.

&, &, Articular *facettes* of the *ossa ilia*, making part of the *sacro-iliac symphyses*.

N^o 1, 1, The *ossa pubis*.

2, 2, The angles of the *ossa pubis*.

3, 3, The articular *facettes* of the *ossa pubis* seen perspectivevely.

4, 4, The *ossa ischia*.

5, 5, The united branches of the *ossa ischia* & *pubis*.

6, 6, The *acetabula*.

The lines indicate the natural size of the *pelvis* in the different directions in which they are traced; and their dotted extremities, the amplification which the superior *strait* acquires in

in those same directions at a separation of eighteen lines and of thirty lines between the *ossa pubis*.

Line I, *Antero-posterior* diameter of the superior *strait*, or the distance from the *pubes* to the projection of the *sacrum*; two inches seven lines.

II, Transverse diameter of the superior *strait*, in its most extensive part; four inches seven lines.

III, Oblique diameter of the superior *strait*, which extends from that point of the *strait* which corresponds with the anterior edge of the left *acetabulum*, to the right *sacro-iliac* junction; three inches eleven lines.

IV, The other oblique diameter, which extends from that point of the *strait* which answers to the anterior edge of the right *acetabulum*, to the left *sacro-iliac symphysis*; four inches.

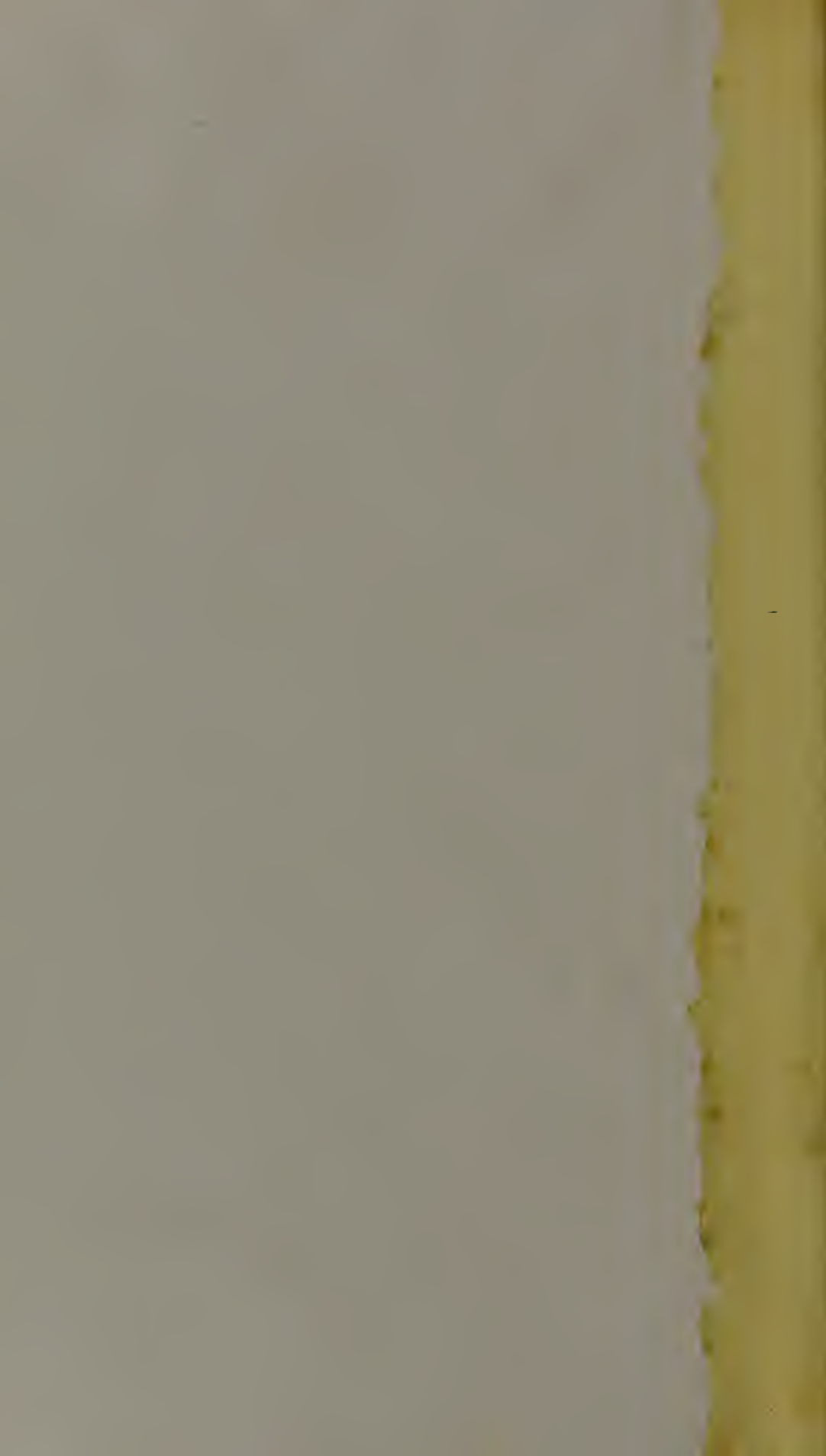
By giving the smallest attention to the relation of these dimensions to those which the head of a *fœtus* of the usual size, presents in their direction in time of labour, we shall see that they are very favourable; except the first, which is, strictly speaking, eleven lines too short, being only thirty-one lines in extent: whereas

whereas the transverse diameter of the head is commonly forty-two. It is only in this latter direction, and to the extent of eleven lines, that it would be necessary to augment the capacity of such a *pelvis*, to favour delivery. As the greater part of those who have performed this new operation, have only obtained a separation of eighteen lines or thereabouts between the *ossa pubis*, I have fixed it at that degree in the second figure.

By such a separation in a *pelvis* perfectly similar to that here represented, the angle of each *os pubis* recedes from the center of the projection of the *sacrum* three lines or very near, beyond their natural distance from it. See the lines V and VI. The antero-posterior diameter receives but the same increase, if we consider it as lengthened to the middle of the dotted line IX, IX, which marks the depth at which it may be presumed the lateral convexity of the head engages. Both the oblique diameters augment five lines before, and about two lines and an half backward; and the transverse diameter seven lines or very nearly.

It is evident that a separation of eighteen lines on such a *pelvis*, cannot remove the disproportion which exists between the small dia-





meter of the superior *strait*, and the small diameter of the child's head; since the former augments only three lines, considered in the most favourable point of view. The amplification which the other diameters receive from a similar separation, is absolutely useless; those diameters being naturally large enough.

Supposing that the *ossa pubis* recede in an equal degree, in separating two inches and an half, the angle of each of them will remove from the center of the projection of the *sacrum*, only six lines farther than the distance they were from it before; which also gives an increase of but six lines between those two points. See the lines VII and VIII. The small diameter of the entrance of the *pelvis* does not gain much more, considering it to the middle of the dotted line X, X, which marks the bounds beyond which the convexity of the head could not engage between the *ossa pubis*, even if the *pelvis* were divested of all its soft parts: which does not happen in the section of the *pubes*, for the neck of the bladder, the canal of the *urethra*, their cellular tissue, the anterior semi-circle of the orifice of the *uterus*, and the anterior part of the *vagina* present at the opening and before the child's head. At this

this degree of separation, the transverse diameter augments about thirteen lines, and each oblique diameter nearly fourteen lines: a superfluous increase, since those diameters, in the *pelvis* represented, have all the length requisite for delivery.

The posterior extremities of the two oblique diameters, which are dotted and marked with the figures XI and XII, shew the separation which is to be feared in the *sacro-iliac symphyses*, by separating the *ossa pubis* two inches and an half. It was at that degree that I observed they were open in most of my experiments; since I could easily put the end of my finger, and even of my thumb, into them.

Admitting that the convexity of one of the sides of the child's head, may let itself in between the *ossa pubis* separated to two inches and an half, as far as the dotted line X, X, traced on that very convexity, it is evident that that separation cannot procure the relation of dimensions necessary for an easy delivery, when the *pelvis* has originally but two inches six or seven lines in the small diameter: whence it follows that the section of the *pubes*, supposing that we could obtain a separation of two inches and an half in the living woman without exposing





posing her to disagreeable accidents, would not answer in the case of a *pelvis* similar to that represented in this fifteenth plate.

Explanation of the Sixteenth Plate.

THIS plate represents a *pelvis* which has but fourteen or fifteen lines in the small diameter of its entrance, and four inches ten lines in its largest. The figure of the superior *strait* is triple as in the preceding plate. The first figure represents it as it is naturally; the second with the *ossa pubis* separated two inches and an half; and the third three inches. These two degrees of separation are those which *M. le Roy* says he constantly obtained, and that they may be obtained without *inconvenience*.

Figure the First.

a, a, a, The three last *lumbar vertebrae*.

b, The projection formed by the union of the last of those *vertebrae* with the base of the *sacrum*.

c, c, The sides of the base of the *sacrum*.

d, d, d, The transverse *apophyses* of the right side of the aforesaid *vertebræ*.

e, e, A ligament extending from the first of those *apophyses*, to the angle made by the internal lip of the *crista* of the *os ilium* towards its middle and posterior part.

f, f, Another ligament which descends from that *apophysis* to the superior part of the *sacro-iliac symphysis*.

g, g, g, g, Part of the *os ilium*.

h, h, The bodies of the *ossa pubis*.

i, i, The angles of the *ossa pubis*.

k, k, The *ossa ischia*.

l, l, The branches of the *ossa ischia* and *pubis*.

m, The arch of the *ossa pubis*.

n, n, The *foramina ovalia*.

A, The *symphysis* of the *ossa pubis*.

B, B, The *sacro-iliac symphyses*.

Figure the Second.

o, o, o, o, Part of the *ossa ilia*.

p, p, The bodies of the *ossa pubis*.

q, q, The angles of the *ossa pubis* separated two inches and an half.

r, r, The

r, r, The cartilaginous *facettes* of the *ossa pubis* seen perspectivevely.

s, s, The branches of the *ossa ischia* and *pubis*.

f, f, Articular *facettes* of the *ossa ilia* making part of the *sacro-iliac symphyses*.

Figure the Third.

t, t, The *ossa ilia*.

u, u, The *cristæ* of those same bones.

V, V, The anterior superior spines of the *ossa ilia*.

x, x, The anterior inferior spines of those same bones.

y, y, The anterior inferior spines of the *ossa ilia* of the second figure.

z, z, The articular *facettes* of the *ossa ilia*, making part of the *sacro-iliac symphyses*.

&, &, The bodies of the *ossa pubis*.

N°. 1, 1, The angles of the *ossa pubis*.

2, 2, The articular *facette* of each *os pubis* seen perspectivevely.

3, 3, The united branches of the *ossa pubis* and *ischia* seen perspectivevely.

4, 4, The *ossa ischia*.

5, 5, The *foramina ovalia*, behind which is seen part of the *ossa ischia* of the second figure.

6, 6, The *acetabula*.

The lines indicate the length of the different diameters of the superior *strait*, in the direction in which they are traced ; and their dotted extremities, the amplification to be expected from a separation of two inches and an half, and of three inches.

Line I, The antero-posterior, or small diameter of the superior *strait* ; one inch two or three lines.

II, The transverse diameter of the same *strait* : this line, which is four inches ten lines in extent, passes under the projection of the *sacrum*.

III, The distance from the middle and left lateral part of the projection of the *sacrum*, to that point of the margin of the *pelvis* which answers to the anterior edge of the *acetabulum* on the same side ; one inch.

IV, The distance from the middle and right lateral part of the projection of the *sacrum*, to that point of the margin which answers to the anterior edge of the *acetabulum* on the same side ; one inch eight lines.

The

The relation of these dimensions to those of a child's head of the usual size, is such that the small diameter of the latter, supposed always to be three inches and an half, surpasses the small diameter of the entrance of such a *pelvis* by twenty-seven or twenty-eight lines. This *pelvis* would be large enough in the direction of the line II, II.

By separating the *ossa pubis* two inches and an half, we augment the breadth of the entrance of the *pelvis* about three quarters of an inch in the direction of the line II, II: as much, or nearly in the direction of the line III, and only six lines in that of the line IV. The angle of each *os pubis* marked by the letter q, recedes from the center of the projection of the *sacrum*, nine or ten lines beyond what it was distant from it before the separation of the bones: the entrance of the *pelvis* increases as much in the direction of the line V, and only half an inch in the course of the line VI. The small diameter, or the line I, continued to the middle of the dotted line IX, IX, which shews the depth to which the child's head may be let in between the *ossa pubis* separated two inches and an half, if the *pelvis* were divested of all its soft parts; this diameter, I say, will
then

then be augmented only seven lines; whence we see that it would still be an inch and an half, at least, shorter than the small diameter of the head of a child of the usual size.

The section of the *pubes* would therefore be fruitless on such a *pelvis*, if it could only procure a separation of two inches and an half; which seems a very exorbitant one. With more reason would it be unsuccessful, if we could separate the *ossa pubis* only eighteen lines, as has most frequently happened; since it could not procure the proportion necessary for delivery, even if we could turn that separation entirely to the advantage of the small diameter of the superior *strait*.

Let us see if a separation of three inches could procure that proportion.

By separating the *ossa pubis* three inches, we augment the breadth of the *pelvis* twelve or thirteen lines in the direction of the line II, II; ten lines at most in the course of the line III; only seven in the line IV; about an inch in the line V; and only seven lines in the direction of the line VI: the angle of each *os pubis* recedes an inch farther from the projection of the *sacrum*, than the distance it was at before the separation of the bones; which aug-

ments the opening of the *pelvis* to the amount of an inch or thereabouts in the direction of the line VII, and only half an inch in the line VIII. The antero-posterior diameter of the entrance of this *pelvis*, considered as far as the middle of the dotted line X, X, which shews the greatest depth to which the child's head could be let in between the *ossa pubis* separated three inches, if the *pelvis* were divested of the soft parts, increases but ten lines or thereabouts; which cannot remove the disproportion that existed before the section of the *pubes*, between that diameter and the thickness of the child's head which must pass in that direction. From whence we ought to conclude that this separation also would have no success, if the *pelvis* were as much deformed as that I have caused to be designed.

The dotted lines XI and XII, shew the separation to be feared in the *sacro-iliac symphyses*, by separating the *ossa pubis* three inches.

The two other dotted lines, marked by the characters IX, IX, and X, X, shew how far the child's head may be let in between the *ossa pubis* separated to the two degrees stated: they were traced on the convexity of a real head applied behind the *ossa pubis* in a *pelvis* stripped of its soft parts.

Notwith-

Notwithstanding the pains I have taken to perfect these plates, I have no doubt that the partisans of the section of the *pubes* will find many faults in them, and will have many objections to make to them: when they appear I shall answer them; and whatever my success may be, the art will not lose, and humanity must gain by it.

Explanation of the Seventeenth Plate.

Figure the First.

A section of the anterior part of the *pelvis* of the woman cut by *M. de Matthiis*, mentioned in par. 2085. The line which crosses the descending branch of the right *os pubis*, shews the section mentioned in the same paragraph; and the two white points above it, the two fragments of the blade of the scalpel, which are still to be seen sticking in the preparation.

Figure the Second.

A section of the anterior part of the *pelvis* of the woman cut by *M. Alphonse le Roy*, mentioned in par. 2061. The white line shews the place where the section was made on the left *os pubis*.

Fig. I.

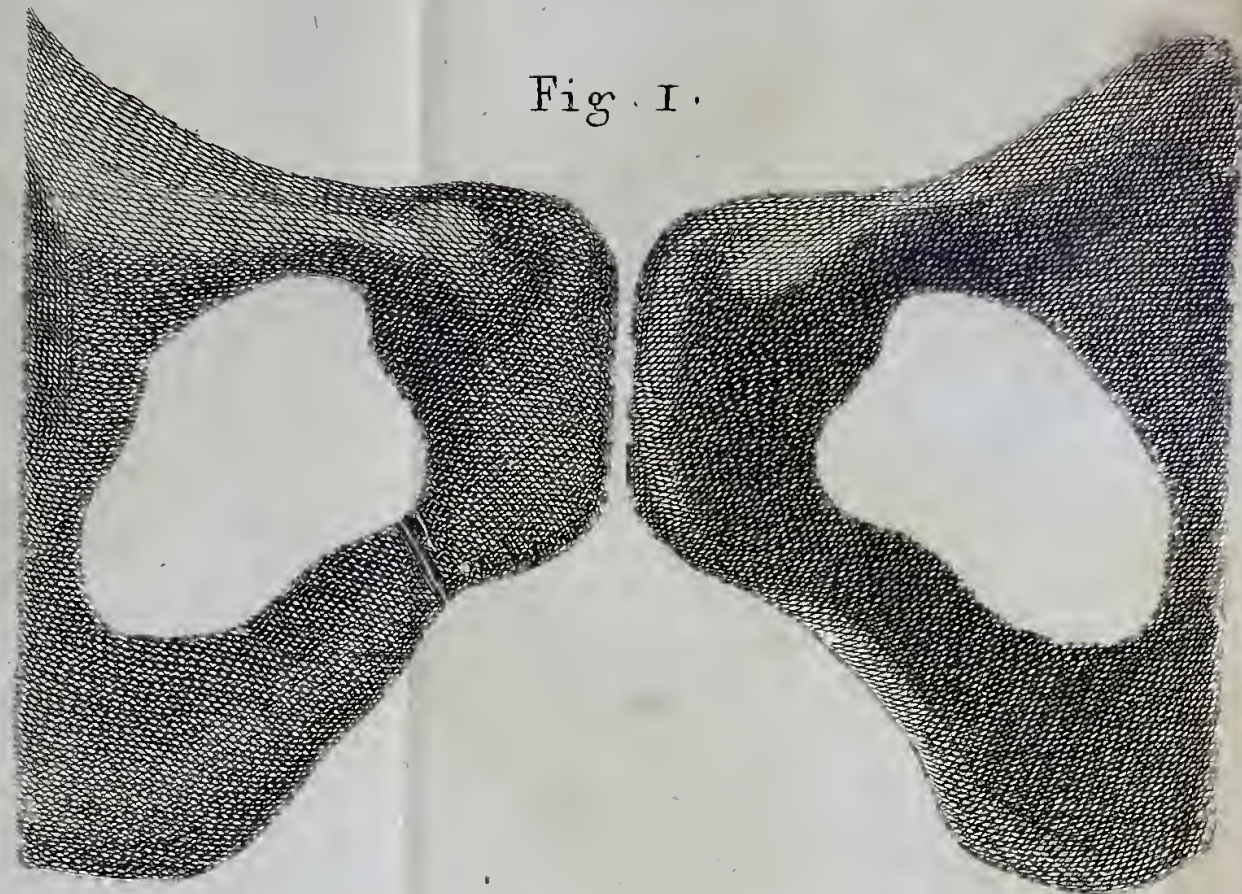


Fig. II.

